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The purpose of the tests and services to become available from this program is to provide three types of information for use, by both junior colleges and entering students, as a basis for realistic decision making. Descriptions of (1) a student's educational and vocational interests, (2) his special abilities, particularly in relation to the academic programs available to him, and (3) his abilities in reading, written communication, and fundamental mathematics will help to place him in appropriate classes. Preliminary results indicate the basic tests in reading, English, and mathematics will be widely applicable in predicting academic success in nearly all curricular areas. The special abilities and various research instruments will have more limited predictive use. (MC)

ED0 26053

Progress Report

CGPP

Comparative Guidance and Placement Program

An Experimental Program for Junior Colleges

Prepared for the
College Entrance Examination Board
by
Educational Testing Service

JC 680 517

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PROGRESS REPORT

COMPARATIVE GUIDANCE AND PLACEMENT PROGRAM

September 1968

Prepared for the College Entrance Examination Board
by
Educational Testing Service

UNIVERSITY OF CALIF.
LOS ANGELES

DEC 19 1968

CLEARINGHOUSE FOR
JUNIOR COLLEGE
INFORMATION

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INTRODUCTION

Rooted in a burgeoning technology and in the principle of equal educational opportunity, our age is one in which education is considered a major instrument of conscious social change. The forces for change in society are reflected at all levels of education, from the preschool years through adulthood. In the area of post-secondary education, a particularly significant aspect of change is the mushrooming growth of two-year, community colleges.

The 1966 Report of the President's National Commission on Technology, Automation, and Economic Progress predicted that area vocational-technical schools and community colleges would be key institutions in attaining the national objective of universal opportunity for two years of post-secondary education. Further, the members of that commission looked ahead to the possibility that these "two types of schools might in many instances be merged into a community education center offering both the theoretical foundations for trade, technical, and business occupations and the opportunity to 'learn-by-doing' while pursuing liberal education or semi-professional training."

Another section of the commission's report stated explicitly a basic need to move away from traditional attitudes and approaches if truly universal educational opportunity is to be achieved:

> "It has been far too common in the tradition of mass free education to ascribe inadequacies to the individual student rather than to adapt educational techniques to meet the needs or to overcome the limitations of individuals. Reducing economic barriers helps those who can succeed in the well-established techniques of formal education and training. They do nothing for those in and out of school who cannot make effective use of established patterns and approaches to education. The task of expanding educational opportunity must also focus on adjusting the system to meet the needs of those who cannot make effective use of existing educational methods." (p. 48)

In community colleges, new approaches are not only desirable, they are essential. The two-year colleges, facing dramatic enrollment increases over the next decade, must provide a wide variety of educational programs to a highly diverse student population. By 1975 there will probably be about 1,300 such colleges in this country (an increase of about 25 percent).

Enrollments will have climbed from the present level of about one and a half million to over three million. A current estimate is that by 1975 well over half of the students entering post-secondary education in the United States will go to community colleges.

In recent years, the dominant philosophy among leaders of the community college movement has been that of offering comprehensive programs for all students. The programs range from university-parallel preparation to technical and occupational curriculums. The heterogeneous nature of the community college's programs is matched by that of its student body, which is more diverse with regard to both levels and types of aptitudes than the student population in most four-year colleges.

Moreover, the educational and career aspirations of community college students are more varied and less well defined than those of their counterparts on the traditional college or university campus. Yet it is necessary for the community college student to make earlier educational decisions and career choices -- he has only two years in which to do so.

Within such a context, the community colleges and the students who attend them obviously have an urgent, mutual need: the need for well-conceived programs of guidance and placement that will facilitate both the student's individual development and the institution's ability to provide appropriate educational programs for all students.

In 1966, the College Entrance Examination Board responded to this need by undertaking, in association with Educational Testing Service (ETS), the development of tests and services aimed at supporting improved guidance and placement of students entering two-year colleges. From the moment of inception, this project was perceived as an experimental program of research and development, to be conducted in cooperation with participating community colleges.

Much has happened since the project began in 1966. By the spring of 1967 it had a name -- the Comparative Guidance and Placement Program. While this is now the formal title of the program, it has become most widely known as "CGP" and, therefore, for the purposes of this report it will be referred to informally as "CGP". During the 1967-68 year, the project entered Phase I -- the first experimental administration of its new guidance and placement tests.

The following pages describe the strategy of approach underlying the project, its scope, its instruments and services, and its research goals. Only preliminary, partial findings from Phase I of the project are included in this report. More complete results of the first year's research will come later, as will another report covering both Phase I and Phase II.

From the indications to date, however, the CGP tests and services developed so far promise to be useful in meeting the guidance and placement needs of the two-year colleges and their students. Ultimately, the new CGP tests and services, and the information systems to be derived from them, may prove useful to other institutions of higher education -- who are also facing problems of growth and change, with the concomitant need to adapt institutional resources and objectives to match the increasingly diverse abilities and expectations of their students.

CHAPTER I

The Scope of the Project: Phase I

In 1966, when the College Board and Educational Testing Service embarked on an effort to develop new tests and services for use in community college guidance and placement, one of the first decisions made related to strategy. The strategy agreed upon was to introduce an experimental program that would combine test research with immediate development of instruments and services similar to those stemming from an operational program.

Underlying this strategy was the belief that the most critical problems in developing a useful guidance program would not be met if the project were approached at the level of test research alone. Rather, a broader developmental approach would provide a stronger basis for moving swiftly from research to an operational program. In the strategy selected, the stages of research, development, diffusion, and adoption (Clark, 1965) were intertwined.

An important feature of the strategy -- indeed, the element that made it feasible -- is the fact that from the beginning the project has been a cooperative one. By enlisting the cooperation of a substantial number of leading junior colleges, the College Board engaged their active participation in shaping the program to meet most effectively the varying needs of students and institutions -- a mode of operation that has characterized the work of the Board since 1900.

This commitment to simultaneous research and program development governed the evolution of the 39-college project in 1967-68 (Phase I)* and will continue to guide the 80-college project for 1968-69 (Phase II).

An initial plan for the program, including tests, related services, and a research design, was laid out by a joint College Board - ETS staff committee in October 1966. In November 1966, the first proposal was submitted for consideration by the College Board's Committee on Research and Development. During late November and December, regional staffs of the College Board and ETS conducted interviews in over 100 junior colleges. This survey elicited criticism and advice from the junior college people regarding the initial plan. A second proposal, which took account of the survey results and of further staff discussions, was then written.

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*Although there were originally 40 participating institutions, one withdrew before the collection of the data was complete.

In January 1967 the second proposal was submitted to a group of 15 junior college representatives who had been appointed to serve as the Advisory Committee on the Development of Two-year College Programs.* Their criticisms, together with revisions growing out of additional staff work and discussions with groups and consultants throughout the country, led to a third revision of the plan. This final proposal was submitted in April to the Board's Committee on Research and Development and to its Committee of Examiners in Aptitude Testing.

In May and June of 1967, a selected group of community colleges throughout the country was invited to participate in the 1967-68 experimental testing. By this time, the project had become known as the Comparative Guidance and Placement Program (CGP). Its goal was to secure cooperation of institutions that would represent various regions of the country, types of institutions (private, public comprehensive, vocational-technical), and communities served (rural, small town, suburban, inner city). During July 1967, orientation meetings and staff visits were held to acquaint the participating colleges with the procedures for testing and for collection of criterion data.

As the statement on Page 3 of the Introduction made clear, this Progress Report presents only partial findings from Phase I of the CGP experimental testing. The first phase involved the participation of approximately 24,000 students in the 39 participating community colleges and an additional 7,500 students from three other special projects.**

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*This committee served until June 1968, at which time a new committee was appointed for Phase II. The new committee includes, in addition to representatives of community colleges, representatives of state education and testing departments and of secondary schools. Both committees are listed in Appendix C, pp. 79 & 80.

**A list of participating colleges for Phase I appears on page 83 of Appendix D). The special projects, briefly, are as follows: (1) The State Department of Education in Georgia is working closely with the College Board and ETS in designing and conducting its own research project, using CGP tests. About 6,000 students in all of that state's 23 area vocational-technical schools are involved in both Phase I and Phase II. (2) In the state of Washington, Dr. Clifford Lunneborg of the University of Washington is conducting four related projects with College Board support, one of which is an evaluation of the CGP test battery in several of the state's public junior colleges. (3) In Florida, a group of junior colleges is doing research in guided studies programs, using CGP tests and other instruments.

In Phase II, during the 1968-69 year, the number of participating colleges will increase to about 80, with approximately 55,500 students being tested. An additional 6,500 students from three other special projects will also participate in Phase II.* A substantially revised battery of tests will be administered in the summer and fall of 1968, and results will be made available in the summer of 1969.

The Measurement Instruments -- A Rationale

The instruments included in the CGP test battery were selected to provide three types of information needed by both junior colleges and entering students as a basis for realistic decision-making. The student has to go through two stages in making decisions. In the first, he should have available to him instruments that will permit him to describe his educational and vocational interests. With information provided by these instruments, he can make initial choices of programs most closely related to his interests. He can also be encouraged by the college to explore the range of additional programs relevant to his interests.

But choices based on interests alone may be unrealistic, so a second stage of decision-making is needed. At this point, the student should have available to him instruments that will provide information about his abilities, so he can be led to consider himself in relation to a reasonably broad description of his performance on relevant tests of special abilities. This additional information will facilitate the guidance process in which college personnel can help the student estimate his performance in different curricular programs. If necessary, he can then consider new choices in planning his college courses.

Corresponding to these decisions by students are those that the college must make in placing the student in appropriate classes. Deficiencies in the basic skills of reading, written communication, and fundamental mathematics need to be identified early, or they can become a barrier to realization of educational objectives. For this reason, placement instruments are part of the CGP test battery.

Although all the instruments will be described more completely later on in this report, a brief description of those used in Phase I follows. The instruments fall into three major areas:

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*A list of participating colleges for Phase II appears on pages 80-82 of Appendix D. Special projects in Phase II again include the 23 institutions in Georgia in addition to a project conducted by the College Education Achievement Project (also in Georgia) and another project under the auspices of the AAJC called the Urban Community College Project.

1. Interest and Background - These measures are intended to give the student the chance to explore occupations and interests that he probably has not encountered.
2. Placement Measures - These instruments are designed to provide information that will support the placement of students in courses and curriculums according to the strengths of both students and colleges. In addition, they provide information towards the development of more appropriate and flexible courses of study. The tests are designed to be useful within the broad range of preparation typically found in community-college populations. Emphasis has been given to identifying incoming students who need remedial help. Tests of achievement in reading, fundamentals of English, and mathematics are provided to assist the institution in evaluating the student's preparation and competency in basic skills.
3. Special Abilities - This group of instruments gives a unique flavor to the CGP battery. It is in most part experimental and and includes new measures of aptitudes and cognitive styles which will hopefully yield more useful information for and about junior college students than more traditional measures. This group of instruments avoids, where possible, a heavy dependency on reading ability for success on the tests.

In Phase I of the project, these instruments were divided into two components, a Core and a Research Battery. The Core group represented the kinds of instruments that previous studies had shown to be useful and valid in the guidance and placement of students. The Research Battery was comprised of instruments of a more experimental nature focusing on cognitive styles, interests, and abilities not covered in the Core Battery. The 39 colleges generally arranged their own testing schedules, with the only limitation being a closing date for the return of answer sheets to Educational Testing Service so that results could be distributed on scheduled dates. Most colleges chose to administer the batteries during their freshman orientation weeks in the fall.

The Core Battery, composed of thirteen tests, required slightly more than 3 1/4 hours, plus administration time. The optional Research Battery contained eight tests, requiring about 2 3/4 hours, plus additional time for administration. While the participating colleges administered the CGP battery principally in group testing and proctor-monitored situations, the instruments dealing with background and interests were, in some cases, self-administered at home by the students in order to reduce group testing time.

Services and Feedback of Data to Participating Colleges

In keeping with the cooperative character of the project, various services and information related to evaluation of the program within each institution were made available to the colleges. The institutional reports that were received by the cooperating colleges included:

Score Reports

Each participating college received a student roster arranged in alphabetical order, reporting the scores in the Core Battery. Selected item responses dealing with the student's background and plans were also reported for individuals, although the majority of items were reported in summary form only. Punched cards were available upon request to enable institutions to carry out supplementary local projects.

Institutional Summary Information

Distributions of scores for each test in the Core Battery were reported for the total group in an institution and for subgroups by sex and by curriculum. Summary information on the Biographical Inventory, in terms of the number and percent responding to each item, was also reported for the total group in an institution and for as many as four curriculum groups that might be specified by the college. Transparencies illustrating the profiles of students in various curricular groups on the interest test scales have also been prepared.

Summary Information Across Institutions

So that institutions could compare the performance of their students with that of all institutions in the program, distributions of scores, as described in Institutional Summary Information on Page 9, were reported for three groups of institutions: private, public comprehensive, and vocational-technical. In addition, transparencies showing interest profiles for major curriculum groups nationally were produced.

College Validity Study

Each participating college received a report containing the results of a study made on the usefulness of the instruments. The study examined the effectiveness of the measures in predicting success among various curriculum groups. Relevant criteria, such as grade average, specific course grades, and persistence in college, were used. A summary of these data is found in Chapter IV of this report.

As the research analyses of Phase I are completed, additional reports, of which this Progress Report is one, will be prepared. These documents will provide a basis for evaluating the efficacy of the new tests and will present various technical data useful in the evaluation and interpretation of results.

The Focus of the Research

The research and service goals of the Comparative Guidance and Placement Program are twofold: to develop instruments to deal with sorting and placement problems and to disseminate the output in a way that will benefit students and institutions.

Crucial to the development of measures of student interest, ability, and achievement is the dissemination of information so as to destroy some of the arbitrary barriers that exist, whether self-imposed or not, and to facilitate the movement into courses and programs more rewarding to and productive for students. Many of the career decisions of junior college students, unless they are in the general transfer programs, are more immediate than those of their four-year counterparts. Course work in their major field begins upon entry to college, thus leaving little time to explore alternatives leisurely. Frequently, the outcomes in terms of success or failure, job or dropout, are determined over a short span of time. Further, community colleges are committed to developing programs that both use the manpower resources of the community and meet the vocational and occupational requirements of society. Therefore, the questions of sorting and placing and of choosing a career exert pressures on both students and institutions to a greater degree than in many of the four-year institutions.

In conducting the research, measures available locally at participating institutions, as well as instruments in the test battery, are being used. Overall grade-point average (GPA), major field grade-point average, and indices of persistence serve as criteria. Further, student satisfaction with course placement and with major field choice is being studied.

Four questions constitute the major focus of the experimental research effort:

1. Can academic success and satisfaction be estimated across different curriculums in order to provide a student with information useful in making a decision as to his academic and vocational choice?

2. Can success be predicted within curriculums, particularly occupational curriculums, given students' entry into them?

3. Are there composites of tests that will function effectively for clusters of curriculums that might be similar across colleges?

4. Can placement instruments be built that will enable colleges to distribute students among the various levels and sections of basic courses, such as English and mathematics, so as to maximize the students' chances for success and the colleges' utilization of faculty and staff?

It can be seen from this resume of research objectives that a major part of the research associated with CGP is concerned with the choice of tests that will eventually become the most effective operational battery. In addition to using grade-point average as a standard against which to measure the performance of the tests, curriculum and course grades are also being used. This project is faced with the problem of differential prediction, because a major problem of the student population in junior colleges is that of career choice. For a larger portion of the population than is true of selective four-year institutions, the problem is not one of choosing among a set of alternative careers those that are most congenial, but one of choosing careers in which they can expect to perform adequately. The wide range of curriculum types which appear in community colleges would seem to afford a better possibility for effective differential prediction than might be expected in more homogeneous types of education that are found in selective institutions.

Because of the importance of making differential predictions, it was recognized at the outset that each student should be associated with some type of curriculum designation. Further, it was recognized that if the information to be gained from analyses of the data were to be of general use, the curriculum designations would need to be identifiable across institutions. Institutional representatives would have to take their existing programs and fit them into broader classifications. While this posed some initial problems, a set of titles for curriculum types was found into which the institutional representatives were able to classify their programs.

A second problem was that of getting statistics applicable to appropriate segments of the student body. This problem exists because the group on which grade criteria are generated consists of those who successfully complete the first semester of the college in a given curriculum. This group is patently not the same as the bewildered, uncommitted entering freshman or summer student who does not know what he wants to do. It was decided to let the entering class be the group for which to obtain appropriate statistics. Corrections for dropout and for selective availability of data by curriculum must be made in order to obtain these statistics. Hence, in the absence of better available technology, it was decided to let the battery itself represent the selection agent. To do this, a study of dropout by curriculum grouped across institutions must be accomplished. Empirical test selection procedures would be applied to find those variables that most effectively predict dropout and then the effective variables used to estimate statistics for those entering the curriculums. Then, a logic for modeling curriculum choice would be developed that would provide efficient empirical procedures for choosing those variables that best predict curriculum choice. These variables would, in turn, be used to correct the statistics for curriculums back to the entering class. Finally, the corrected statistics for the entering class would be used to select the most valid predictors of performance in the different curriculums. Those identified in this fashion would be the candidates for inclusion in later batteries.

One who is familiar with the body of technique associated with the types of inference described above will recognize a far removal of the decisions reached from the data observed. This, of course, is one aspect of the guidance problem that has plagued measurement specialists for years, and one that is being handled in ways that are somewhat novel, another experimental aspect of the program. Insofar as possible, checks of the assumptions have been built into the program; future administrations of the selected tests will help provide further checks.

The types of analyses described here constitute the most elaborate conceptualization of the research analyses. In addition, the usual test selection studies on existing curriculum groups will be accomplished in the usual way. The modeling of the choice of curriculum is analogous to the discriminant function type of study suggested by many guidance experts. Finally, in keeping with the placement part of the program, studies of placement in English and mathematics in terms of expressed satisfaction and the decision for continuing in college are being conducted.

This Progress Report does not, of course, begin to deal with most of the research questions as outlined on page 11. What it does provide is essentially a description of the project, the tests, the performance of the students, and some preliminary results bearing on the question of predictive validity of the instruments within various curriculums. It does not provide a basis for evaluating the utility of the tests for curriculum choice - which is the problem of differential prediction among curriculums and the selection of clusters of tests. Nor does this report deal directly with the evaluation of the tests for placement purposes; a significant study of this problem is now under way in Phase II of the project in the community colleges of Connecticut. The purpose of this report is to report descriptive information so far compiled, and to give some early results with respect to the predictive validity of the tests for overall grade-point average criterion within various curriculums and colleges. Even this preliminary report, however, should provide a valuable overview of the project and interesting data regarding the progress of the research in Phase I of the project.

CHAPTER II

Descriptions of the Participating Institutions, Students, and Instruments

The Institutions

This chapter deals with the 39 institutions participating in CGP, Phase I, and the students to whom the tests were administered.* The institutions were chosen for inclusion based on size, geographic location, and type of control. A majority of the colleges enrolled student bodies of 500 to 2,000 students, with slightly more than one-fourth of them having enrollments of 2,000 or more. Participants were located in all regions of the country, with the Northeast accounting for 10, the South 11, the Midwest 10, the Southwest 4, and the West 4. Most of the colleges were public comprehensive community colleges (30 in number) with six private junior colleges and three vocational-technical institutes.** The comprehensive community colleges were classified according to location: rural, suburban, urban, and inner city.

Table 1

Number of Colleges by Selected Classification Variables

Size	No. of Colleges	Location	No. of Colleges	Type of Control	No. of Colleges
0 - 499	3	Northeast	13	Public Comp.	30
500 - 999	10	Midwest	10	Private	6
1,000 - 1,999	13	South	9	Voc.-Tech.	3
2,000 - 4,999	8	Southwest	4		
5,000 - 10,000	3	West	3		
Over 10,000	2				

About one-fourth of the colleges provide on-campus housing, either for all students or on a limited basis. More than half of the institutions follow open-door admissions policies with 14 of them employing some degree of selectivity in admitting students.

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*One of the original 40 institutions withdrew before the collection of data was complete.

**The previously referred to 23 vocational-technical institutes in Georgia are involved in a related, but separate, project involving the use of the same instruments.

Table 2

Colleges Classified According to Housing & Admissions Policies

Housing	No. of Colleges	Admissions Policies	No. of Colleges
Students live off campus	30	Open-door	25
On-campus housing	6	Other	14
Limited on-campus housing	3		

The CGP focuses on describing students and analyzing data within and across a variety of curriculums. The curriculum groups found in the largest number of colleges were liberal arts, business, and science and pre-engineering in college parallel, and science and engineering in occupational-technical programs. The numbers of colleges offering the various programs of study included in the project are listed in Table 3, below:

Table 3

Curriculum	No. of Colleges Having Students in Curriculum[a]	No. of Students Represented in Each Curriculum[a]
College-Parallel:		
Liberal Arts	30	6,797
Science & Pre-Engineering	16	1,383
Fine Arts	5	250
Agriculture	2	67
Occupational-Technical:		
Science & Engineering	18	1,223
Business	25	2,223
Health Related	7	251
Commercial Arts	2	131
Other	6	411
Occupational-Vocational:[b]		
Mechanics	4	286
Business	3	145
Health	3	67
Art Skills	1	91
General/Developmental	4	522
Undesignated	12[c]	2,307

[a] Only curriculum groups of 20 or more students with both test scores and criterion data are included.

[b] These curriculums are most heavily represented in the separate project referred to earlier, involving 23 area vocational-technical schools.

[c] A number of students tested listed no curriculum or coded one not classified under the 14 major headings.

Data in Table 3 also reveal the sizes of each of the 14 curriculum groups across the 39 institutions in terms of numbers of students tested. By far, the largest single curriculum was liberal arts, followed by business, college-parallel science and pre-engineering, and technical science and engineering. The number of curriculum groups per college ranged from one to eight in terms of the 14 major clusters listed in Table 3. The median number of groups per college was 3.5.

The Students

The large majority of students represented in CGP entered college directly from high school and plan to attend full time. This is attributable more to the experimental groups of students in CGP than to the nature of the participating institutions and their student bodies. Colleges were asked to test entering freshmen only, and most of them chose, in addition, to test only full-time students. There was a difference, however, in the proportions entering the three types of institutions directly from high school: 89 percent for the private junior colleges and 84 percent for the public comprehensive colleges, while the proportion was 70 percent for the vocational-technical institutes. This difference was attributable largely to the fact that about 16 percent of the men entering the vocational-technical institutes had been in service or working from one to two years.

The socioeconomic backgrounds of students entering the institutions in CGP reveal some differences among the types of institutions represented. However, the data for private junior colleges and vocational-technical institutes should not be interpreted as representing all private junior colleges or vocational-technical institutes because the number of participating institutions is small. As Table 4 shows, students attending the private junior colleges in CGP come from families with higher income, higher occupational levels, and more education than students attending public comprehensive colleges. The vocational-technical institutes enroll students from families ranking lowest on the four variables listed.

Table 4

Socioeconomic Background by Type of Institution

	Family Income	Father's Occupation	Father's Education	Mother's Education
	$10,000 Or More	Prof. or High Level Managerial	Attended College	Attended College
	Percent	Percent	Percent	Percent
Private Junior Colleges	37	25	40	30
Public Comp. Junior Colleges	28	12	26	20
Voc.-Tech. Institutes	23	5	15	13

The data presented in Table 4 for private junior colleges are not strikingly different than those compiled from previous studies,* which reveal that private junior college students come from families in which 42 percent have incomes over $10,000, 20 percent have fathers at professional or managerial levels, and 39 percent have fathers with some college experience. Public two-year college data show only slight differences as follows: 40 percent with family incomes over $10,000, 16 percent with fathers at professional or managerial levels, and 29 or 34 percent (two sources cited) with fathers having attended college.

Differences occur not so much in the data derived from students attending various types of junior colleges, but between the backgrounds of junior college students and students attending other types of institutions. In The Junior College Student: A Research Description, K. Patricia Cross reports that socioeconomic backgrounds of junior college students, both private and public, are similar to students attending four-year public colleges, but different from those attending public and private universities, private four-year colleges, and Catholic and Protestant four-year colleges.**

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*Data in this paragraph come from K. Patricia Cross's monograph, The Junior College Student: A Research Description, Ch. III, p. 15, and the two primary sources, Astin, A. W., Panos, R. J. & Creager, J. A. National norms for entering college freshmen - fall, 1966. ACE Research Reports. Washington: American Council on Education, 1967, and a study by Medsker, L. L. & Trent, J. W. The influence of different types of public higher institutions on college attendance from varying socioeconomic and ability levels. USOE Cooperative Research Project No. 438. Berkeley: Center for Research and Development in Higher Education, University of California, 1965a.

**Ibid.

Students taking the CGP battery were asked a number of questions to determine their need for counseling assistance, their sources of support while attending college, and their interest in extracurricular activities.

A majority of the students in each of the three types of participating institutions said they needed help in developing their reading speed and comprehension and in developing good study habits. But only a fifth to a third expressed an interest in assistance with their personal problems. Further, a majority of the students did not feel a need for assistance in finding jobs, but did want help regarding their educational plans. While these findings are similar to the SCOPE* data reported by K. Patricia Cross (1968, p. 44), there were differences among students in the three kinds of institutions in CGP. Table 5, on Page 20, shows that a larger proportion of students in vocational-technical institutes wanted help in finding jobs than in either of the other kinds of institutions. Further, a smaller proportion expressed a need for help with their educational and vocational plans. This suggests that students in these institutions have their vocational goals more clearly defined and are moving more precisely and immediately toward entry into the labor market. In contrast, students in the private junior colleges are not as concerned immediately with finding jobs, but are thinking of continuing their education beyond the first two years in college.

Differences are revealed again among students in the three types of participating institutions when comparisons are made regarding financial support. Seventy percent of the students in vocational-technical institutes expressed no need for information regarding financial aid, while 61 and 62 percent, respectively, in the private and public junior colleges responded the same way. Coupled with information regarding the students' sources of support, the differences in these students are more striking. While 62 percent of the private junior college students derive their support from their parents, only 40 percent of the students in vocational-technical institutes and public comprehensive junior colleges receive

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*School to College: Opportunities for Postsecondary Education (SCOPE). Unpublished data from Center for Research and Development in Higher Education, University of California, Berkeley.

Table 5

Students' Expressions of Need for Counseling

	Need Help Finding a Job	Need Help Re Ed.-Voc. Plans
Private Junior Colleges	23	68
Public Comp. Junior Colleges	37	66
Vocational-Technical Institutes	44	55

parental support. An additional 33 percent of vocational-technical students obtain their support primarily from job or governmental aid (for example, the G. I. Bill) and an additional 44 percent of the public junior college students support themselves through job or previous earnings and savings. Comparatively, the percentage of students in four-year institutions (colleges and universities) deriving support primarily from parents is 62 to 64 percent similar to the private junior college students (Astin, et al, 1966 and ACE Research Report, 1967).

Most of the students in the vocational-technical institutes and community colleges, 62 and 67 percent respectively, planned to work while attending college, while only 28 percent of the private junior college students did. Forty-five percent of the community college students planned to work from 6 to 20 hours per week; as many as 20 percent of the vocational-technical students planned to work more than 25 hours per week.

Extracurricular activities stimulate some interest among junior college students, but athletics appears to be the only area which produces enthusiastic response in all three types of institutions. Students were asked to indicate whether they liked to participate in seven collegiate activities. Responses are shown in Table 6 on the following page.

Table 6

Student Expressions of Interest in Collegiate Activities

(In Percentages)

Like to Participate

Area of Interest	Private Jr. Colleges	Public Comp. Jr. Colleges	Voc.-Tech. Institutes
Religious Activities	58	41	57
Student Government	73	54	54
Literary, Public Speaking, Debating, or Dramatics	40	32	25
Athletics	78	61	65
Departmental or Pre-Professional Clubs	48	47	49
School Spirit Activities	77	62	61
Political Organizations	41	34	38

Students in the private junior colleges exhibit stronger interest in student government, athletics, and school spirit activities. There appear to be few differences between students in the vocational-technical institutes and the public community colleges.

Information was collected about students' reasons for attending the institutions they chose and about their educational and occupational aspirations. Clearly, they chose institutions for different reasons. Forty-five percent of the students attending private junior colleges gave as their main reasons for attending the college they selected the general academic reputation or strength in their intended majors. While most of the public comprehensive colleges (52 percent) listed proximity to home and low fees and costs as the main reasons, those entering vocational-technical institutes were attracted largely because of strength in their selected programs of study (43 percent).

In fact, 77 percent of the students indicated they planned to live at home with their parents, and 16 percent said they would live in their own homes, private rooms or apartments, or with relatives or friends. Comparatively, only 15 percent of the private junior college students planned to live at home and 5 percent listed the other categories named above.

Differences existed, too, in statements regarding their educational plans. Table 7 shows that most of the students in private junior colleges (62 percent) were planning to work toward a bachelor's degree or higher. A smaller majority of students (53 percent) in community colleges were planning the same thing. This is in striking contrast to the 82 percent in the vocational-technical institutes who planned to complete programs of one or two years' duration.

Table 7

Student Plans for Continuing Their Education

(In Percentages)

Length of Program Or Degree	Private Junior Colleges	Public Comp. Junior Colleges	Voc.-Tech. Institutes
One-year Program	03	03	24
Two-year Program or Degree	19	27	58
Bachelor's Degree	40	32	04
Education Beyond Bachelor's Degree	22	21	02

Data in Table 7 vary somewhat with those reported in the ACE study (Astin, et al, 1967, p. 20.), in which 40 percent of the private junior college students and 37 percent of the public junior college students planned to obtain bachelors' degrees, and 28 percent and 31 percent, respectively, planned to continue their education beyond the bachelor's degree. In any case, the educational plans of junior college students, as well as those in vocational-technical institutes are different from those of students attending four-year colleges and universities, where a higher proportion plan to work toward advanced degrees (K. Patricia Cross, 1968, p. 4.).

These plans are confirmed by the following: 78 percent of the students in private junior colleges planned to transfer to four-year colleges or universities after leaving the junior colleges, and 69 percent of the community college students planned the same thing, while 75 percent of the students in vocational-technical institutes planned to work full time or enter military service. In both private and public junior colleges, a higher proportion of women than men (21 and 29 percent compared to 5 and 11 percent) planned to enter the labor force directly to work full time.

The most popular majors expressed among junior college students planning to transfer were education, business, and engineering. Twenty-eight percent of the females in private junior colleges and 25 percent in public junior colleges indicated education as their major when they transferred. Business was listed by 24 percent of the men in the private junior colleges and 20 percent in the public junior colleges. Seventeen and 15 percent of the men in the private and public junior colleges, respectively, listed engineering.

Although a number of students entering junior colleges and vocational-technical institutes (10-17 percent) admit they are undecided about the kind of future life they anticipate, most of the men in the junior colleges look forward to professional, business or academic careers, while men in the vocational-technical institutes prefer careers as trained technicians, professionals, or in business. Women in the junior colleges prefer a life at home with family or an academic career, preferably teaching; women in the vocational-technical institutes name home and family most frequently, with business careers second. See Table 8 below.

Table 8

Selected Future Life Preferences

(In Percentages)

Kind of Future Life Preferred	Private J.C.		Public J.C.		Voc.-Tech. Inst.	
	Men	Women	Men	Women	Men	Women
Academic	12	21	13	25	2	4
Business	20	9	19	9	18	23
Professional	28	5	26	11	18	16
Trained Technician	6	-	8	1	32	2
Home & Family	5	30	5	23	9	30

Even though students express preferences such as those listed in Table 8, they also express some uncertainty about the kind of work they want after finishing their education. About one-fifth of the junior college students said they knew exactly what kind of work they wanted, while one-fourth of them indicated their plans were still vague. Vocational-technical students were somewhat more certain; one-third knew exactly what kind of work they wanted and only 13 percent said their plans were still vague. However, students attending the CGP colleges were conscious of a strong relationship between education and a good job. An overwhelming majority of vocational-technical students (85 percent) said their main reason for getting an education was to obtain a high-paying job, and a majority of the junior college students (70 percent private junior college students and 74 percent public junior college students) indicated the same thing, though not as strongly. Similarly, vocational-technical students (78 percent) thought the object of education was mostly job training; the public junior college students were more or less divided between classifying it as job training or general education; and the private junior college students tended to think of it as mostly general education.

Description of the Test Instruments

As discussed briefly in Chapter I, the CGP instruments fall into three major areas: (a) interests and background, (b) special abilities, and (c) placement measures covering reading, English fundamentals, vocabulary and mathematics. The tests consisted of two parts: a Core Battery, which all participating institutions administered, and a Research Battery, which was administered in over half of the 39 participating institutions. Tests in the Core Battery included placement instruments, some of the interest and background measures, and some of the special abilities. Generally, these tests covered areas that were not experimental in character, or areas on which experimentation - some extending back a decade - had been conducted. The Research Battery included new measures that were thought to be useful in college guidance and placement, but on which little or no research had been conducted.

A brief description of the instruments in each battery follows. The reader will want to refer to Tables 9 and 10 for information regarding numbers of items, time limits, and test reliability.

I. Core Battery

A. Biographical Inventory: Items in the Biographical Inventory have been designed for ultimate use in counseling and guidance, though initially the Inventory has been used to provide summary descriptions of classes and curricular groups within an institution. Areas included in the Inventory are:

- Educational plans or occupational goals, such as plans for graduate study or further training.

- Family background items, such as occupation of parents, educational level of parents, and size of family.
- High school and work experience, such as participation in clubs and organizations, favorite subjects in school, level of academic performance in school, part-time or full-time summer jobs, attitude toward working hard to achieve good grades, and amount of time spent studying.
- College plans and needs, such as type of part-time work needed or anticipated while in college, areas of extracurricular interest, need to find work.
- Local option items to enable a college to ask questions that are relevant to that particular college.
- Two experimental sets of items were designed to produce academic and vocational aspiration or motivation scales. These items are described in detail in the Research Battery section.

B. Comparative Interest Index: CII is an experimental interest inventory with items focused on behavior and activities that are familiar to students. It yields 12 scaled scores and contains 16 items in each scale. Scales reflect both academic and occupational interests. The scales are:

1. Biology
2. English
3. Fine Arts
4. Mathematics
5. Social Sciences
6. Secretarial
7. Physical Sciences
8. Foreign Languages
9. Music
10. Engineering Technology
11. Home Economics
12. Business

In addition, experimental items for two new scales were developed. These are described in the Research Battery section.

C. Basic Reading Ability:* This test includes brief passages (300-500 words) with several related questions covering a variety of reading skills. The principal emphasis is on straightforward comprehension. The subject matter for the passages is varied and reflects interests and reading materials of a nonacademically-oriented population. The test is centered at a difficulty level that will support identification of persons for remedial programs, rather than throughout the whole range of proficiency.

D. Vocabulary:* This test includes synonyms in the typical format of a brief test of this type. Content avoids as much as possible academic or collegiate bias.

E. English Fundamentals:** This score, reported in some analyses, consists of two tests:

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*Reading and Vocabulary scores were combined to yield a total Verbal score, the validity of which is reported in a later chapter.

**The two English Fundamentals subscores were combined with Vocabulary to yield a total English score.

a) Sentences - The 40 grammar items (rules and usage) consist of the sentence-correction type in any of its several forms. Essentially, one identifies the faulty component among a number of underlined elements in a sentence.

b) Spelling - The 20 spelling items ask for the identification of the word that is misspelled among five alternatives presented.

F. Mathematics Fundamentals: All items are quantitative comparisons in which the student indicates which of two quantities is greater, or asserts their equality, or asserts the lack of sufficient data to reach a judgment. The item type offers four choices, is easily and quickly answered and affords an excellent opportunity to demonstrate basic competence in various mathematical areas. Two optional tests of 30 minutes each are offered: (a) General Mathematics and Algebra, (b) Algebra-Trigonometry. Equating through the broad-range common section, Algebra, permits placing students along a single scale. Routing to one of the subtests is accomplished by booklet instructions and by instructions from the supervisors. For purposes of test analyses, each of the optional tests was divided into two sections.

G. Spatial Reasoning: This test consists of two ten-minute subtests, which are: (1) Choosing A Path, and (2) Intersections. Spatial scanning is assessed by means of items requiring the subject to "choose a path." This problem presents some elements of a maze-tracing task and also bears a superficial resemblance to tracing of circuits in a wiring diagram. The item type used in the measure of spatial visualization requires identification of the correct intersection of a plane with a figure depicting a solid. In some analyses, scores for a combined "spatial" ability were reported in addition to the two subtests.

H. Mechanical Ability: This test consists of two ten-minute sections: (1) a tool knowledge test, and (2) a mechanical movements test. The tool knowledge test requires identification of pictures of tools. The mechanical movements test consists of items in which simple drawings depict objects in situations which illustrate various mechanical principles. The respondent must identify the most likely condition or outcome among a set of alternatives. In some analyses, a total score for "mechanical ability" was reported in addition to the subtest scores for tool knowledge and mechanical movements.

I. Perceptual Efficiency: This is a clerical omnibus test consisting of two separately timed five-minute halves: (1) Letters, and (2) Symbols. Items require rapid recognition of differences in corresponding elements of two arrays of alphabetic and symbolic materials. In some analyses, data for a combined "perceptual efficiency" score were reported in addition to the two subtests.

Table 9

Core Battery Test Characteristics

(Phase I)

Core Battery Tests	Number of Items	Time	K-R (20) Reliability
A. Biographical Inventory	59	15 mins.	-
B. Comparative Interest Index	92	40 mins.	(See scales)
(1) Biological Sciences	(16)	-	.93
(2) English	(16)	-	.91
(3) Fine Arts	(16)	-	.92
(4) Mathematics	(16)	-	.95
(5) Social Sciences	(16)	-	.94
(6) Secretarial	(16)	-	.91
(7) Physical Sciences	(16)	-	.95
(8) Foreign Languages	(16)	-	.96
(9) Music	(16)	-	.93
(10) Engineering	(16)	-	.94
(11) Home Economics	(16)	-	.94
(12) Business	(16)	-	.91
C. Reading	35	30 mins.	.80
D. Vocabulary	30	10 mins.	.75
E. English Fundamentals	60	25 mins.	-
(1) Sentences - Rules and Usage	(40)	(20) ""	.82
(2) Spelling	(20)	(5) ""	.84
F. Mathematics Fundamentals			
Option (A): General Math-Algebra[a]	70	30 mins.	-
(1) Section I (first half)	(35)	(15) "	.77
(2) Section II (second half)	(35)	(15) "	.68
Option (B): Algebra-Trigonometry[a]	70	30 mins.	-
(1) Section I (first half)	(35)	(15) "	.72
(2) Section II (second half)	(35)	(15) "	.52
G. Spatial Reasoning	52	20 mins.	-
(1) Choosing A Path	(32)	(10) "	Speeded
(2) Intersections	(20)	(10) "	.63
H. Mechanical Ability	50	20 mins.	-
(1) Tool Knowledge	(30)	(10) "	.82
(2) Mechanical Movements	(20)	(10) "	Speeded
I. Perceptual Efficiency	180	10 mins.	-
(1) Letters	(90)	(5) "	Speeded
(2) Symbols	(90)	(5) "	"

[a] In other analyses, the subtests are combined to yield a single Mathematics score.

II. Research Battery:

A. General Information: Four ten-minute subtests of general information were developed, in which items consist of vocabulary and concepts drawn from broadly defined occupational areas. These four areas, which represent the generally accepted divisions of vocational curriculums in junior colleges, are: (1) technology and trades, (2) health-related fields, (3) business and commerce, and (4) public and social service. The assumption underlying these tests is that interest in an area, coupled with general alertness, governs acquisition of information about a particular field of activity. This test provides a related, but different, approach to the assessment of interest and ability.

B. Year 2000: This test requires that the subject bring to bear several premises or rules necessary to produce a correct solution to a problem. The test, called the "Year 2000" test, showed considerable promise in the Davis-Linn Bronx Community College study (College Entrance Examination Board Research and Development Report 66-7, No. 2, July, 1966). Items in this test comprise increasingly complex directions for selecting certain dates from a calendar for the year 2000, and are regarded as heavily dependent on integrative reasoning. For additional information, see French (1964).

C. Letter Groups: This test requires the subject to draw general concepts from sets of data or to form and try out hypotheses. Items in the "letter sets" problems are regarded as representative of tasks dependent on inductive reasoning. For purposes of test analysis, the items were divided into two sections. For additional information, see French (1954).

D. Cognitive Style Tests:

(1) Estimation Questionnaire - The test consists of items requiring the subject to estimate various quantities, such as the heights of the tallest and shortest men in the world. Through measures of category width, the test provides an estimate of constricted, as contrasted with open or impulsive, orientations. Although a new form of this test was devised for CGP, earlier work was conducted by Pettigrew (1958) and by Messick and Dermen (1958).

(2) Design Variations - In this test the subject first learns an arbitrary nonsense name for each of several abstract designs. Subsequently, he is required to attach this label to variations of these designs. The test permits description of "global", as contrasted with "analytical", approaches to problems. Several scores are obtainable from the tasks. These include: (a) Memory for Designs, which is a test of immediate or short-term memory, and identifying variations in the (b) elements, (c) background, and (d) form of the designs. The test was developed at ETS by Samuel Messick (1965).

(3) Hidden Figures - This test of speed and flexibility of closure involves identification of a pattern embedded within a more complex drawing. Research conducted by Samuel Messick and others suggests that the test is a measure of field independence-dependence. For purposes of analysis, the test was divided into two sections.

E. Work Preference Scales: This test consists of items yielding scores along three scales - interest in working with (1) people, (2) data, and (3) things. By exploring preferences for different kinds of environmental interactions, a significant new approach to assessing vocational and occupational interests may be developed. In particular, the combination of these dimensions with those yielded by the Comparative Interest Index offers promise for guidance and for curricular choice. The first was developed at ETS by Gerald Halpern and Robert Boldt.

F. Interest Scales for CII: Sixty new items were developed in order to incorporate more vocational and occupational items in the Comparative Interest Index, and to explore possibilities for new keys of particular interest to junior colleges. Two new scales are the developmental focus of this instrument: (1) interest in paramedical and health-related occupations, and (2) interest in teaching and public and social service. These items were developed by Robert Boldt at ETS.

G. Biographical Inventory Scales: A number of items have been included in the Biographical Inventory that ask students to assess their own past behavior, attitudes, and future aspirations in relation to both academic and vocational success. The purpose is to develop two new scales: (1) Vocational Motivation, and (2) Academic Motivation, that might be useful in counseling with entering students. See Table 10, Page 30.

These two batteries of tests constitute the experimental instruments employed in the Phase I CGP study in 1967-68. All of the tests have been reviewed, and with few exceptions new forms of the tests, or entirely new tests, make up the battery for Phase II of CGP, being conducted in 1968-69. Thus, over the two-year period, an even wider range of instruments than these will be studied. The aim is the development of an efficient battery of tests useful in counseling with students, in describing classes and curricular groups for institutional planning, in choosing among programs by students, in developing bases for expectations of success within programs, and in assessing skills and preparation in fundamentals of English and mathematics for placement in basic courses. This multifaceted approach is reflected in the choice of instruments. In addition, careful consideration has been given to development of instruments that are at the appropriate levels of difficulty for the students tested.

Underlying this approach to test development and related services is the belief that today's post-secondary students are, as Cross described them, a "new generation of students" who require a new generation of measurement instruments. To this need the Comparative Guidance and Placement Program is addressed.

Table 10

Research Battery Test Characteristics

(Phase I)

Research Battery Tests	Number of Items	Time	K-R (20) Reliability
A. General Information	80	40 mins.	-
(1) Technology and Trades	(20)	(10) "	.73
(2) Health-Related Fields	(20)	(10) "	.60
(3) Business and Commerce	(20)	(10) "	.63
(4) Public and Social Service	(20)	(10) "	.55
B. Year 2000 (Integration Induction)	20	10 mins.	Not available
C. Letter Groups[a]	30	14 mins.	(.64 between parts)
(1) Section I	(15)	(7) "	.70[b]
(2) Section II	(15)	(7) "	.73[b]
D. Cognitive Style	107	1 hr. 2 mins.	-
(1) Estimation Questionnaire	(20)	(15) mins.	Not available
(2) Design Variations			
(a) Memory for Designs	(10)	(2) mins.	.85
(b) Section I (Elements)	(19)	(15) "	.84
(c) Section II (Form)	(16)		.76
(d) Section III (Background)	(10)		.67
(3) Hidden Figures[a]			
(a) Section I (first half)	(16)	(15) mins.	.76[b]
(b) Section II (second half)	(16)	(15) "	.82[b]
E. Work Preferences	72	20 mins.	(See scales)
(1) People	(24)	-	.89
(2) Data	(24)	-	.87
(3) Things	(24)	-	.94
F. New Interest Scales for CII	60	15 mins.	(See scales)
(1) Health	(30)	-	.90
(2) Public Service	(30)	-	.89
G. Biographical Inventory Scales	20	Not timed	Not available
(1) Vocational Motivation	(10)	" "	" "
(2) Academic Motivation	(10)	" "	" "

[a] In other analyses subtest scores are combined to yield a single score.

[b] Probably an overestimate.

CHAPTER III

Patterns of Performance

Detailed characteristics and properties of the instruments in the Comparative Guidance and Placement batteries were given in Chapter II. The purpose of this chapter is to describe the performance of the students on the instruments in the Core Battery.

It should be emphasized that data presented in this report are preliminary pending the completion of the research on Phase I. Information presented in this chapter serves to describe, in a tentative way, some of the characteristics of student performance as it was distributed across the major curriculum areas.

Data presented in graphic form on Graphs I, II, and III, are based on summary statistics for all students tested in given curriculum groups across colleges classified by type of institution. For simplicity, only the mean scores were plotted.

Other data in this chapter were derived from summaries compiled for curriculum groups of 20 or more students within a given college. Moreover, all such groups were restricted to those students for whom complete data (both test scores and criterion scores) were available. Mean scores for all Core Battery instruments and for age were computed for each curriculum group, and the median of the means of all groups in the same curriculum category was selected as an index of performance in a curriculum.

Comparisons of the median values within and across curriculum groups could then be made to describe the characteristics and performance of students in these groups. This procedure, of course, does not reflect differences resulting from various group sizes. Neither have calculations been made to establish the statistical significance of differences between groups. Yet these preliminary summary data, however crude, might serve to illustrate early in the project some patterns of performance and some areas for further investigation.

For the most part, students in the CGP project were first-time, full-time freshmen. One would expect, therefore, the median age of these students to be about 18 years. While this was true generally throughout the population, there were interesting differences across colleges for particular curriculum groups. See Table 11 below.

The average age for students in each curriculum group within each institution was computed and the median of these average ages determined for all groups in a given curriculum. For example, the median average age was 18.2 for the 27 liberal arts groups, with the means ranging from 17.8 to 23.3. Similarly, while the median was 18.2 for business students, the average age per group ranged from 17.7 to 20.6. Students in the health programs were generally older than those in other courses of study. The average age per health group ranged from 19.0 to 23.9 for the occupational-technical health programs and 19.3 to 27.2 for the vocational health programs.

Table 11

Age Distributions for Selected Curriculum Groups

Curriculum Group	Median (of the Average Ages)	Range of Average Ages Per Group	Number of Groups
College-Parallel:			
Liberal Arts	18.2	17.8 - 23.3	27
Science & Pre-Engineering	18.2	17.7 - 19.5	15
Fine Arts	18.2	17.9 - 19.0	5
Occupational-Technical:			
Science & Engineering	18.6	18.1 - 19.9	16
Business	18.2	17.7 - 20.6	24
Health	20.2	19.0 - 23.9	7
Occupational-Vocational:			
Mechanics	18.4	18.0 - 20.0	4
Business	18.2	17.8 - 18.9	3
Health	20.2	19.3 - 27.2	3
General/Developmental	18.2	17.9 - 18.3	3

Interest Patterns

The twelve scales of the Comparative Interest Index were used to record the expressed interests of the students. Data have been compiled separately for the three types of institutions in the project and for students in a given curriculum group across all colleges.

The mean scores on each of the twelve scales* were computed for students in each of the fourteen curriculums for colleges classified according to one of three types. One can compare, then, science and engineering students in the private junior colleges, the vocational-technical institutes, and the public junior colleges. An example of the computation is given in Graph I, on Page 34, which plots the mean scores of the students in occupational-technical curriculums by type of institution.

From the graph, two things are clear. First, the patterns of interests of the students are essentially the same regardless of the kind of institution they are attending. Second, the students score high on those scales most typically representative of interest in science and engineering, that is, engineering technology, physical sciences, and mathematics, and low on others such as English, music, and home economics. For other curriculum groups by type of institution, the patterns of interests are essentially the same, a fact which serves to highlight the similarities of students, with regard to subject matter interests, across all three types of institutions. The striking differences occur among the various curriculum groups across all institutions. Samples of the differences are displayed in Graphs II and III on Pages 35 and 36. Data are given for students in public junior colleges.

As one might expect, the profile of liberal arts students is undifferentiated, probably indicating their indecision about a major field of study, as well as the variety of major fields subsumed by this category. These students contrast sharply with the fine arts majors who show strong interest in art and, to some degree, in music and a lack of interest in mathematics. In comparison, science and engineering students show relatively strong interest in mathematics, physical science, and engineering technology.

Graph III illustrates the differences in patterns of interest among three occupational-technical curriculum groups: business, health, and art. Again,

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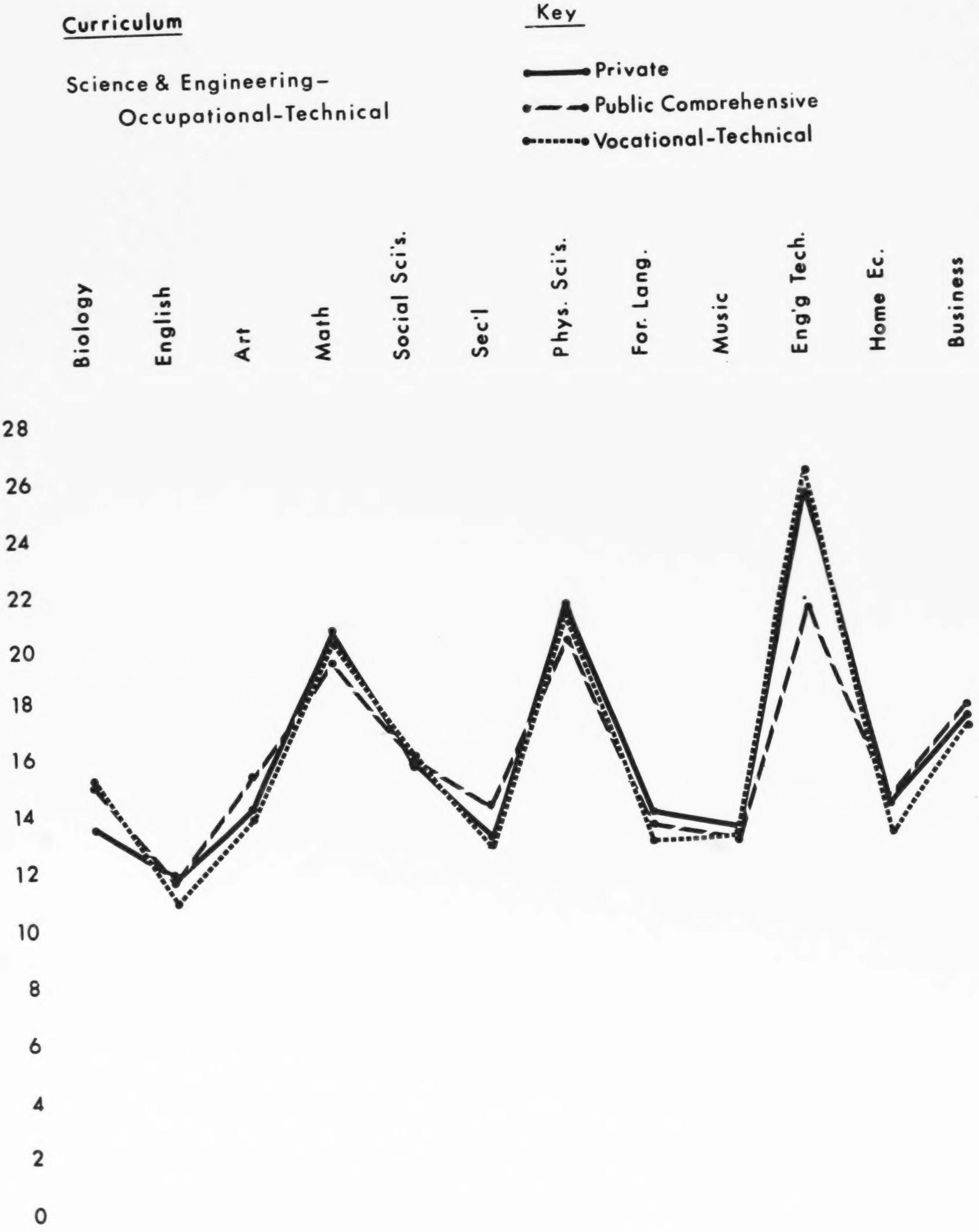
*The twelve scales are Biology, English, Fine Arts, Mathematics, Social Sciences, Secretarial, Physical Sciences, Foreign Languages, Music, Engineering Technology, Home Economics, and Business. The score range on each CII scale is 0-32, with a mean of 16. The scales on Graphs I, II and III, however, are 0-28, since the average scores were within this range.

Graph I

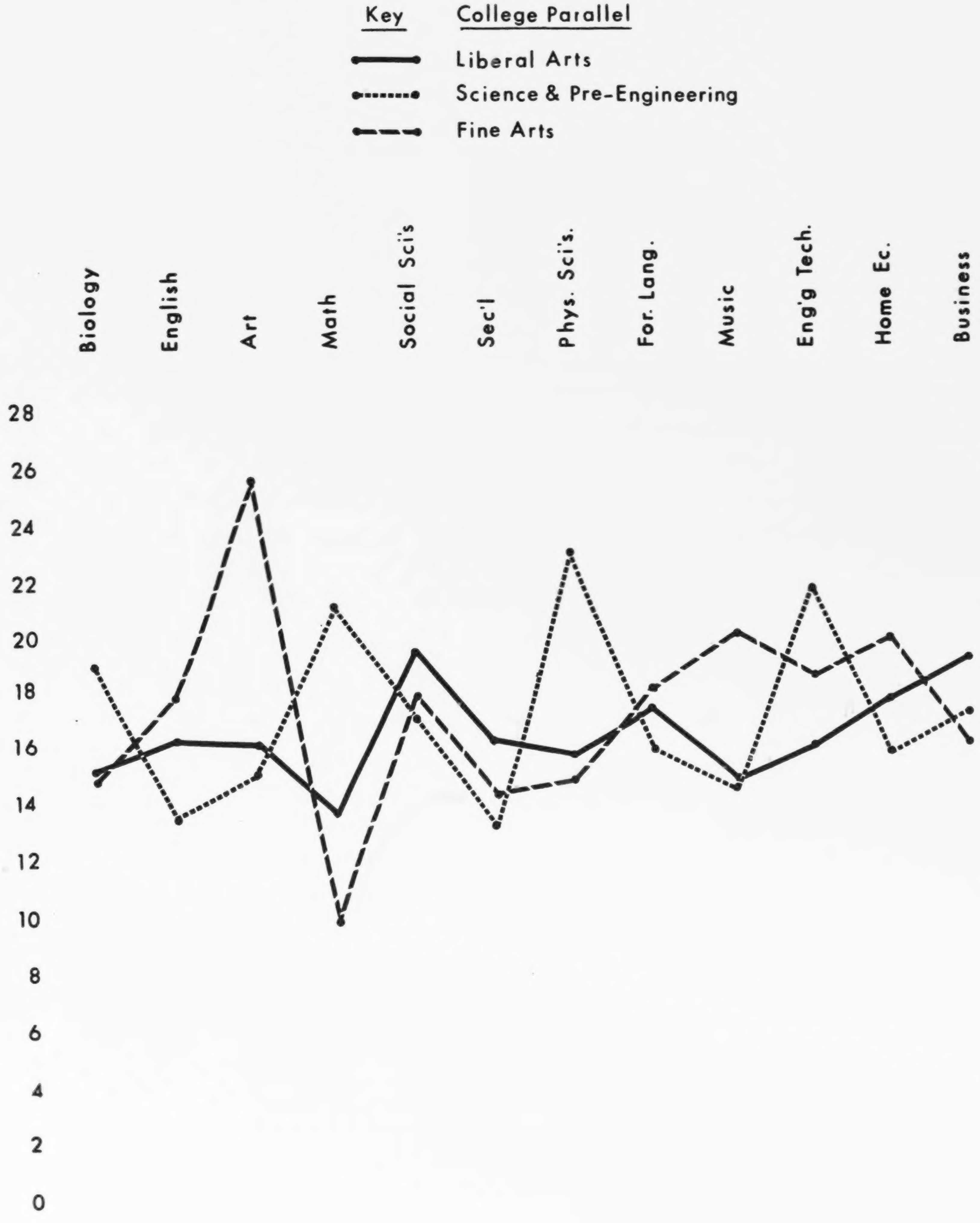
COMPARATIVE INTEREST INDEX PROFILES



Graph II

COMPARATIVE INTEREST INDEX PROFILES

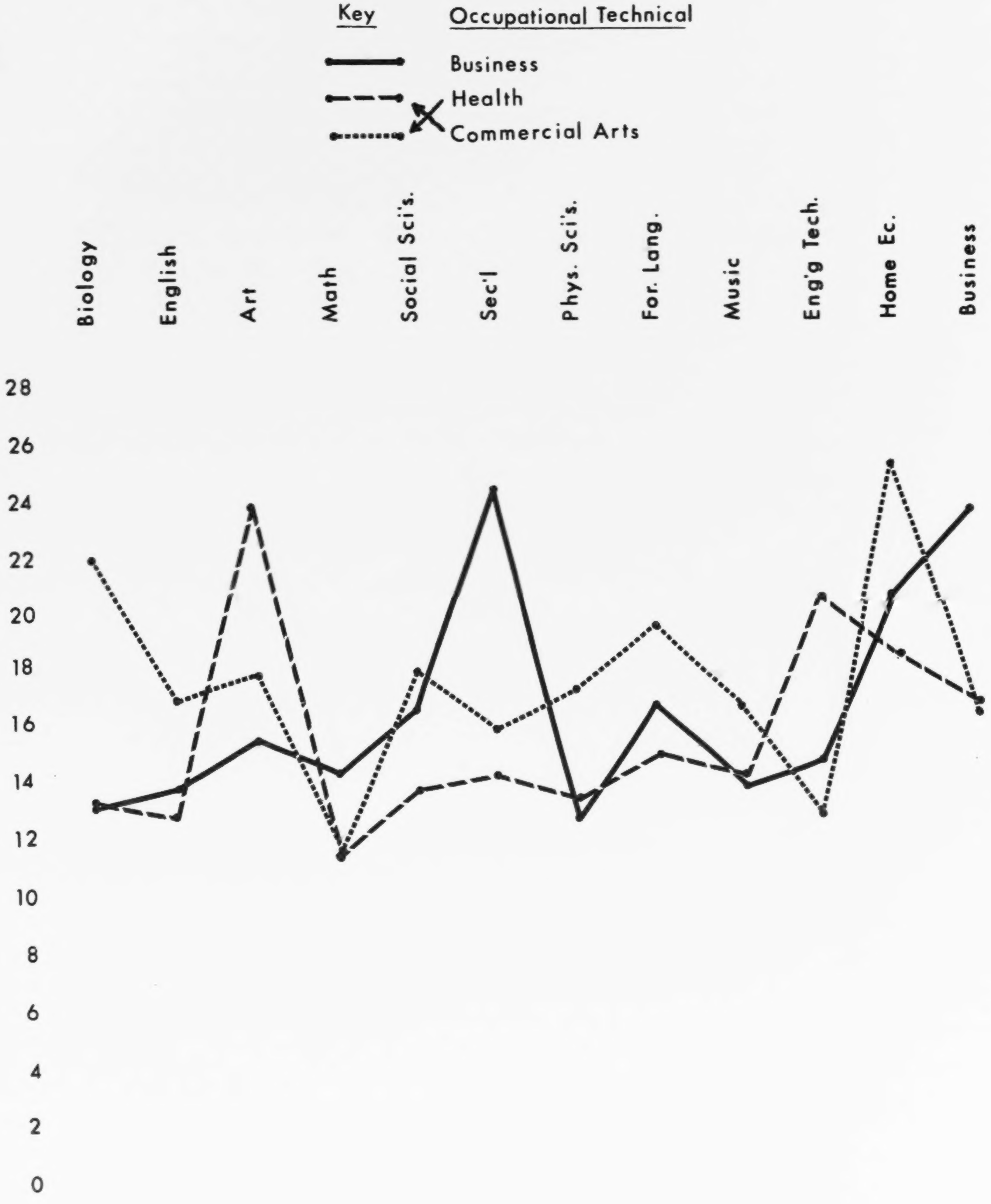
Public Comprehensive Community Colleges



Graph III

COMPARATIVE INTEREST INDEX PROFILES

Public Comprehensive Community Colleges



the Comparative Interest Index works well to highlight differences in interests. The business students score high on the secretarial and business scales; the health students show strong interest in biology and home economics (probably reflecting their intentions to enter the nursing profession); and the commercial art students are strong on the art and engineering technology scales (perhaps resulting from plans to enter technical courses of study containing drafting and technical design).

Comparative Interest Index scores were examined across all institutions for each of the fourteen major curriculum groups. The average score for each CII scale was computed for each curriculum group within each college and the median of these means was derived in order to illustrate the differentiated patterns of interests across all curriculum groups. Curriculum groups with fewer than 20 students within a given college were excluded in order to somewhat reduce distortions due to size of group. Table 12, on Page 38, presents a summary of these results in selected medians of the average scores for each group. Those medians which exceeded the scale mean of 16 by two points or more are indicated by a single plus sign (+) and those higher by four points or more are indicated by a double plus sign (++). Similarly, the medians below the scale mean by two points or more are shown by a single minus sign (-) and by a double minus sign (--) if four or more points below the scale mean. This rule was established arbitrarily in order to identify as clearly as possible the scales which reflected strong interest or lack of interest in a given area. A detailed table showing the medians and ranges for all variables and all groups is presented in Appendix A (Table I).

Reading across the table, one can observe that the scale scores are high or low in expected subject areas for various curriculum groups. For example, among the college-parallel curriculums, liberal arts students are somewhat high on the social studies, business and home economics scales, but are low on the mathematics scale. Science and engineering students exhibit high scores on biology, mathematics, physical sciences, and engineering technology and low scores on the secretarial, English and music scales. Art students show considerable interest in art, somewhat less interest in home economics and music and very little interest in mathematics.

In the occupational-technical areas, the science and engineering students, like the college-parallel science and engineering students, rank high on

Table 12

Summary of Patterns of Comparative Interest Index Performance

Curriculum Groups	Number of Groups	Biology	English	Art	Math	Soc. Sci.	Sec'l	Phys. Sci.	For. Lang.	Music	Eng. Tech.	Home Ec.	Business
College Parallel													
11 Liberal Arts	27				-	+						+	+
12 Science and Pre-Engineering	15	+	-		+		-	++		-	++		
13 Fine Arts	5			++	--		-	-		+		+	
14 Agriculture	2	++	--	--	-		--	+	--	--	+	-	
Occupational-Technical													
21 Science and Engineering	16		--		++		-	++	-	-	++	-	
22 Business	24	-			-		++	--		-	-	++	++
23 Health	7	++			--				+		-	++	
24 Commercial Arts	2	-	-	++	--	-	-	-	-	-			
25 Other	6	-	-		-				-	-			
Occupational-Vocational													
31 Mechanical	4	-	--	--	-	-	-		--	--	++	-	
32 Business	3	--	-		--		++	--		-	--	++	++
33 Health	3	++			--				++		-	++	
34 Art Skills	1	--	--		--	-	-	--	--	-			
General													
41 General/Developmental	3				-								
51 Unclassified	8				--			-					

Key:
++ Median of Means above 20.0
+ Median of Means above 18.0

- Median of Means below 14.0
-- Median of Means below 12.0

mathematics, physical sciences, and engineering technology. They are generally not interested in English, foreign languages, music, secretarial, or home economics curriculums. Business students exhibit a high degree of interest in secretarial and business fields, and in home economics. They show a dislike for mathematics and the science and technical areas. Health students, many of whom plan to be nurses, rank high on the biology and home economics scales, somewhat lower on the foreign languages scale, and low on mathematics and engineering technology. Although there are only two commercial art groups, the patterns of interest are those that would be expected: high in art, and low on most of the other scales, engineering technology, business and home economics excepted. Students in the miscellaneous category of "Other" do not exhibit distinctive profiles, though they express some lack of interest in biology, English, mathematics, music, and languages.

In the occupational-vocational area, the students in mechanics, like those in science and engineering, show strong interest in activities related to engineering; however, they exhibit a lack of interest in a number of areas as represented by nine of the twelve scales. Business students, like those in the occupational-technical curriculum, rank high on the secretarial, business, and home economics scales; they lack interest in English, mathematics, the sciences, engineering technology and music. Students in health, like those described above, rank high in biology and home economics. Somewhat surprising is the high median on the foreign language scale. However, not surprising are the undifferentiated profiles of the general/developmental students and the unclassified students (those who listed no curriculum or a curriculum not contained in the fourteen groups) except that both groups show some disinterest in mathematics.

Another way to examine the effectiveness of CII as a means of assessing interests is to look at the median values for each scale across all curriculums. This can be done by reading down the columns in Table 12. The biology scale, for example, describes the interest of students in health and agriculture and the lack of interest of students in business, art, and mechanics. Median values on the art scale are highest for students in the fine arts and commercial arts programs and are lowest for students in agriculture and mechanics. The mathematics scale reflects the strong interest in mathematics of science and engineering students and the lack of interest of students in art, health, and business. Other scales, such as secretarial and business for students in business programs and physical sciences and engineering technology for science and engineering students, function so as to describe effectively the patterns of interest across a variety of curriculum groups.

Patterns of Test Performance

Test scores from measures in the Core Battery include, reading, vocabulary, verbal, sentences, spelling, English, mathematics, spatial reasoning, mechanical ability, and perceptual efficiency. Data on the composites of the special ability measures are not presented here, though Chapter IV discusses the components of these tests along with all others, both Core and Research, in the battery.

The median values of the curriculum means are presented in Table 13, Page 41. Curriculums with fewer than three groups are not included in this table, but are presented in the more detailed table which appears as Appendix A, Table II, along with the ranges of mean scores for all variables and all groups.

Two kinds of comparisons can be made by observing data in Table 13. The performance of students in a given curriculum can be observed relative to that of students in other programs of study. Secondly, the relative performance of students within a given curriculum can be observed across the variety of tests in the battery.

Liberal arts students, for example, perform better on the placement measures and tests of verbal ability than on the special abilities tests. Students in science and engineering are consistently higher than the liberal arts students in their performance on all the tests, with the exception of spelling and vocabulary; they score higher on the mathematics and special abilities tests than on the others. The science and engineering students in the occupational-technical area do not perform as well as the college-parallel, science, and engineering majors on the traditional measures such as English, vocabulary, and mathematics, but they out-perform them on the special abilities measures of spatial reasoning and mechanical ability.

Business students in the occupational-technical area are similar to the liberal arts students on sentences, spelling, and English, but lower on vocabulary, reading, and mathematics; they do well, as one would expect, on measures

Table 13

Median Values of Mean Scores on Core Battery Tests for Selected Curriculum Groups

	College Parallel			Occupational-Technical				Occupational-Vocational			
	Lib. Arts N=27	Sc. & Pre-Eng. N=15	Fine Arts N=5	Sc. & Eng. N=16	Bus. N=24	Health N=7	Other N=6	Mech. N=4	Bus. N=3	Health N=3	Gen. Studies N=3
Reading	51.2	52.8	49.9	50.2	48.5	52.5	49.3	45.5	44.1	41.5	48.5
Vocabulary	51.4	51.3	51.5	48.5	48.0	55.5	48.5	44.5	42.9	44.6	48.6
Verbal	51.5	52.6	51.2	49.1	48.2	54.6	49.0	44.5	43.0	42.3	48.4
Sentences	51.7	52.5	51.1	47.5	51.2	55.0	46.8	44.4	50.6	44.5	47.8
Spelling	51.2	49.8	49.7	48.0	51.3	54.0	47.2	42.9	48.6	49.4	48.0
English	51.7	51.9	50.9	47.1	50.4	55.9	46.8	43.4	47.4	43.8	47.7
Math	50.6	57.6	47.3	52.9	46.9	46.5	48.2	46.4	41.5	39.0	47.6
Spatial Reasoning	48.7^{a}	55.0^{c}	50.4	56.2^{d}	47.0^{f}	46.3	50.5	52.2	44.6	45.0	46.2
Mechanical Ability	49.6^{b}	55.6^{c}	48.4	58.9^{e}	46.8^{g}	44.7	53.4	59.1	42.2	39.8	48.0
Perceptual Efficiency	50.8^{a}	52.1^{c}	50.4	49.1	51.8^{f}	52.8	51.2	46.3	49.8	43.2	51.0

Underscored medians are those at or above the scale mean of 50.

Notes: ^{a}N=26
^{b}N=25
^{c}N=14
^{d}N=15
^{e}N=14
^{f}N=23
^{g}N=22

of perceptual efficiency. Within the business curriculum, students perform best on those measures which might be associated with work in the field of business: spelling, sentences, English, and perceptual efficiency.

Somewhat surprising is the performance of students in health. They exhibit, in general, the highest scores of any group on the tests of verbal ability and achievement in English, perhaps reflecting the preponderance of female students in this group; they also score above average on perceptual efficiency. Within the curriculum, they perform less well on mathematics and spatial and mechanical reasoning.

Similar comparisons of other curriculum groups can be made from data in the table. For the most part, the college-parallel students perform better than other groups, health excepted, on the placement measures. Science and engineering students, either college-parallel or occupational-technical, and mechanics students perform better than other groups on the spatial and mechanical reasoning tests. Students in the miscellaneous category "Other" also perform well on the special ability measures, better than they do on the other tests in the Core Battery. Finally, students in the occupational-vocational curriculums and the general/developmental area compare least favorably on almost all measures (mechanics excepted regarding spatial and mechanical reasoning). This comparison may be somewhat distorted, however, by the small number of groups represented in these curriculums.

Although it can be observed that students in various curriculums perform more or less as one would expect, for example, liberal arts students perform higher in areas requiring verbal facility and students in the more technical curriculums perform higher in special abilities measures and mathematics, it remains for data in Chapter IV and for further research to establish whether or not the tests function within curriculums and differentially to predict performance of junior college students.

CHAPTER IV

Preliminary Findings on Test Validity

In evaluating the effectiveness of the CGP tests for use in guidance and counseling, and in program selection, two basic questions arise:

(1) Do the tests span the range of different curricular offerings so that appropriate tests can be identified for clusters of curriculums?

(2) Do the tests predict one or more criteria of success within various curricular clusters?

In this chapter, preliminary findings are presented which touch only indirectly on the first question. Most of the data pertain to an evaluation of the predictive validity within curriculums for the CGP tests used in Phase I. Further analyses now under way, and later reports will contain the results of more extensive evaluations. The results presented here, although incomplete, are relevant, encouraging and indicative of those that are likely to be found upon more exhaustive study.

Criterion Data

Although the analyses reported at this time use a criterion of first-term grade-point average, research now being conducted will evaluate the validity of the CGP tests for a criteria of persistence (Did the student re-enroll the second term?) and course grades in English and mathematics. The latter are especially pertinent to the later conduct of experimental placement studies.

Additional criteria, student satisfaction with their courses, educational plans and progress, which were collected via a questionnaire, will form the basis for additional analyses.

A copy of the criterion form used by the colleges is presented on the following page. Its use permitted the processing of individual validity studies for each of the participating colleges, and provided an opportunity for colleges to obtain information about "local predictor" tests currently in use, as well as the experimental CGP battery.

COMPARATIVE GUIDANCE AND PLACEMENT PROGRAM – VALIDITY STUDY CRITERION FORM

THE INFORMATION IN THIS BLOCK WAS OBTAINED FROM TESTS IN THE FALL OF 1967. DO NOT ALTER.

NAME OF INSTITUTION

NAME OF STUDENT

SEX

DATE OF BIRTH

SOCIAL SECURITY NUMBER

CURRICULUM CODE

STUDENT QUESTIONNAIRE

The questions below pertain to courses you have taken this year, the program in which you are enrolled, and your vocational choice and job plans. Your answers are for research purposes only and will not affect your status at this institution in any way. They will be analyzed by Educational Testing Service along with questionnaires from students in approximately forty colleges across the country.

In the boxes at the right of each statement, indicate how well the statement expresses your opinion or situation (i.e., how true it is for you) by blackening the appropriate answer space. Please answer 35 questions.

D Disagree. (This is definitely not true for me.)
d Probably disagree. (This is probably not true for me.)
N Not applicable, no opinion, not certain.
a Probably agree. (This is probably true for me.)
A Agree. (This is true for me.)

If you have not taken English or Communications this term, mark N to Nos. 1-7; if you have not taken Math, mark N to Nos. 8-14.

1. My course in English simply repeats things I have already learned in high school or on my own
2. Most of the work in my English course is too difficult for me to handle.
3. Before I could enter the regular freshman English course, I have had to take a make-up course
4. During the term, I switched sections and was moved into a more advanced course in English. (Note: If you did not switch, mark N; if you switched to a lower course, mark D; if you switched to an advanced course, mark A.)
5. Time passes quickly when I am in my English class or doing my homework
6. I have to spend a lot of time doing homework in English in order to keep up with the class
7. The English I have studied this term will help me in the future, in my courses and in my job
8. My course in math simply repeats things I have already learned in high school or on my own
9. Most of the work in my math course is too difficult for me to handle.
10. Before I could enter the regular college math course, I have had to take a make-up course
11. During the term, I switched sections and was moved into a more advanced course in math. (Note: See note in No. 4 above.)
12. Time passes quickly when I am in my math class or doing my homework
13. I have to spend a lot of time doing homework in math in order to keep up with the class.
14. The math I have studied this term will help me in the future, in my courses and in my job
15. I plan to stay in the program I am in.
16. I think my program of study will prepare me adequately for the job I want.
17. I am really looking forward to later courses in my major field.
18. In my major field, there are too many prerequisites to the really useful and interesting courses.
19. The courses in my major do not seem related to my future job plans.
20. I have not quite decided what I want to major in . . .
21. I am going to need better training than I can get here in my program
22. I have definite plans for my vocation after I finish my work here.
23. I think my intended vocation will afford me a good income.
24. In the last year, I have changed my mind about my vocation several times
25. I read a lot outside my college work about my vocational interest.
26. I think I will like the type of job I will be able to get upon completion of my work here.
27. In taking courses here it has become clear to me that I will not be able to get the job I wanted.
28. I have a clearer idea of what I want in my vocation than when I came here.
29. I think my courses are just about at the right level of difficulty.
30. For the most part the courses I am taking are the ones I wanted to take.
31. I find the textbooks awfully hard to read
32. I intend to continue my education until I get an associate degree or certificate
33. I plan to attend part time at the college
34. I plan to finish four years of college
35. I plan to quit school indefinitely

PERSISTENCE

ENROLLED IN 2ND TERM:

YES

NO

ATTENDING END OF FIRST TERM:

DROP-OUT DURING FIRST TERM:

PRESENT CURRICULUM CODE

GRADE POINT AVG. IN MAJOR FIELD (END OF TERM)

IF NEGATIVE, MARK HERE

OVERALL GRADE POINT AVERAGE (END OF TERM)

IF NEGATIVE, MARK HERE

LOC. PRED. 5

IF NEGATIVE, MARK HERE

LOC. PRED. 4

IF NEGATIVE, MARK HERE

LOC. PRED. 3

IF NEGATIVE, MARK HERE

LOC. PRED. 2

IF NEGATIVE, MARK HERE

LOCAL PREDICTOR 1

IF NEGATIVE, MARK HERE

MATHEMATICS

COURSE NUMBER

GRADE (END OF TERM)

IF NEGATIVE, MARK HERE

ENGLISH

COURSE NUMBER

GRADE (END OF TERM)

IF NEGATIVE, MARK HERE

GC97P60

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Princeton, N. J., 08540

Also used in conjunction with collecting the test criterion data was a "Curriculum Classification Form". This form enabled participating colleges, working with the project staff, to classify their various programs into a common set of curriculum clusters. This system of clustering was developed by the ETS staff and college representatives as part of the preliminary workshops that were held in the spring and summer of 1967, preceding test administrations. As previously stated, most of the data presented in this chapter is concerned with the prediction of one or more criteria of success within these various curriculums. The Curriculum Classification Form appears as Appendix B.

Predictive Validity of Individual Tests

Summaries are given in Tables 14-18, pages 48-52, of the observed validity of each of the CGP, Phase I, tests for the grade-point average criterion. These summaries can be understood by considering what would happen if all of the colleges offered programs in all areas. In this case, a correlation between a given test variable and the GPA criterion for each group would be calculated, thus producing up to 39 replications of a within-curriculum validity coefficient for each of the thirty CGP variables contained in this analysis. In actual practice, of course, not all curriculums are offered in each college, or the numbers enrolled and tested may be too small to permit meaningful analyses.

The strategy employed in this preliminary study was to calculate a validity coefficient for a curriculum group within any college where the group was at least as large as 20. For example, 27 colleges offered curriculums in liberal arts (Code 11), 24 in occupational-technical business (Code 21), and seven in curriculums classified as occupational-technical health (Code 23). For each variable then it was possible to obtain a set of validity coefficients, each calculated on a separate sample of students enrolled within a particular curriculum and within a particular college. The median of this distribution of validity coefficients was then taken to represent that distribution; that is, it was regarded as typical of what might be expected for college samples generally within that curriculum group.

This procedure is one of several that might have been adopted as a means of summarizing the data. One obvious disadvantage is that although the samples are of varying size, this is disregarded when the median of the distribution

Summary of Salient Validity Coefficients for Curriculum Group Clusters

Using the Grade-Point Average Criterion

PLACEMENT TESTS	Lib. Arts 11	Sci. & Pre-Eng. 12	Fine Arts 13	Agric. 14	Sci. & Eng. 21	Business 22	Health 23	Comm. Arts 24	Other 25	Mech. 31	Business 32	Health 33	Art Skills 34	General/ Devel. 41	Unclass. 51
Reading	x	x		x	x	x	x	x	x			x		x	x
Vocabulary	x	x		x	x	x	x	x	x		x	x			x
Verbal	x	x		x	x	x	x	x	x		x	x		x	x
Sentences	x	x	x	x	x	x		x	x	x	x	x		x	x
Spelling	x	x		x		x	x	x			x				x
English	x	x	x	x	x	x	x	x	x	x	x	x		x	x
Mathematics	x	x		x	x	x	x		x	x	x	x			
Special Abilities															
Choosing a Path										x					
Intersections					x	x									
Spatial					x					x					
Tool Knowledge										x					
Mechanical Movements										x					
Mechanical Ability										x					
Letters	x			x			x				x				
Symbols			x			x					x			x	
Perceptual Efficiency	x			x		x					x			x	
RESEARCH TESTS													34	41	51
Cognitive Style															
Hidden Figures			x			x									
Design for Memory						x				x	x				
Design Variations I					x	x			x		x				
Design Variations II								x							
Design Variations III			x		x	x		x			x				
Estimation Questionnaire															
General Information															
Technology					x					x		x			
Health	x		x			x	x				x	x			
Business	x				x		x		x		x			x	
Public Service				x			x				x			x	
Year 2000	x				x	x			x						
Letter Groups	x	x				x									
Biographical Inventory															
Vocational Motivation														x	
Academic Motivation		x				x					x			x	

Key: An "x" indicates the median validity coefficient is equal to or greater than .20 and that a minimum of one-third of the coefficients are both statistically significant (P=.05) and equal to or greater than .20.

Table 15

Median Validity and Proportion of Coefficients Attaining Statistical Significances

(Placement Tests)

Curriculum Groups	Reading	Vocabulary	Verbal	Sentences	Spelling	English	Mathematics
College Parallel							
11 Liberal Arts	.32 23/27	.34 24/27	.36 24/27	.33 25/27	.24 17/27	.40 27/27	.25 15/27
12 Science and Pre-Engineering	.29 8/15	.24 7/15	.31 11/15	.32 10/15	.21 5/15	.29 8/15	.25 9/15
13 Fine Arts				.35 3/5		.30 2/5	
*14 Agriculture	.37(Low) 2/2 .61(Hi)	.42(Low) 2/2 .44(Hi)	.43(Low) 2/2 .60(Hi)	.47 1/2	.46 1/2	.38(Low) 2/2 .57(Hi)	.42 1/2
Occupational-Technical							
21 Science and Engineering	.31 8/16	.22 7/16	.32 8/16	.25 11/16		.31 9/16	.41 11/16
22 Business	.36 21/24	.32 17/24	.40 18/24	.41 21/24	.30 14/24	.48 20/24	.26 14/24
23 Health	.39 5/7	.42 5/7	.51 5/7		.38 4/7	.49 5/7	.33 4/7
24 Commercial Arts	.36 1/2	.47 1/2	.37 1/2	.29(Low) 2/2 .61(Hi)	.44 1/2	.20(Low) 2/2 .62(Hi)	
25 Other	.33 4/6	.33 3/6	.40 4/6	.42 5/6		.35 4/6	.28 3/6
Occupational Vocational							
*31 Mechanical				.31 4/4		.26 4/4	.24 4/4
*32 Business		.31 1/3	.25 1/3	.27 1/3	.29 1/3	.43 2/3	.40 2/3
*33 Health	.31 2/3	.30 2/3	.38 2/3	.32 1/3		.38 2/3	.24 1/3
*34 Art Skills							
General							
*41 General/Developmental	.25 1/3		.25 2/3	.23 1/3		.23 1/3	
51 Unclassified	.20 4/11	.23 4/11	.22 4/11	.27 6/11	.22 5/11	.27 6/11	

Notes: (1) Minimum criterion for inclusion in table is a statistically significant validity of .20 or better for 1/3 or more of the groups within that curriculum.

(2) Entries in cells are:
.XX Validity
XX/ Number of r's significant at .05 level.
/XX Number of groups having N20 for which a validity coefficient was calculated

* Number of groups is sufficiently small that Median r may be misleading.

Table 16

Median Validities and Proportion Attaining Statistical Significance

(Special Abilities Tests)

Curriculum Groups	Choosing A Path	Inter-sections	Spatial	Tool Knowledge	Mech. Movements	Mech. Ability	Letters	Symbols	Perceptual Efficiency
College Parallel									
11 Liberal Arts							.22 $^{12}/_{27}$		.22 $^{12}/_{26}$
12 Science and Pre-Engineering									
13 Fine Arts								.27 $^{2}/_{5}$	
*14 Agriculture							.37 $^{1}/_{2}$		.38 $^{1}/_{2}$
Occupational-Technical									
21 Science and Engineering		.26 $^{6}/_{15}$	.26 $^{5}/_{15}$						
22 Business		.23 $^{9}/_{23}$						.32 $^{12}/_{23}$	.27 $^{12}/_{23}$
23 Health									
*24 Commercial Arts									
25 Other									
Occupational-Vocational									
*31 Mechanical	.24 $^{2}/_{4}$		.24 $^{2}/_{4}$	.28 $^{3}/_{4}$	.31 $^{3}/_{4}$	.36 $^{3}/_{4}$			
*32 Business							.21 $^{1}/_{3}$	.47 $^{2}/_{3}$	.43 $^{2}/_{3}$
*33 Health									
*34 Art Skills									
General									
*41 General/Developmental								.24 $^{2}/_{3}$	.23 $^{2}/_{3}$
51 Unclassified									

Notes: (1) Minimum criterion for inclusion in table is a statistically significant validity of .20 or better for 1/3 or more of the groups within that curriculum.
(2) Entries in cells are:
.XX Validity
XX/ Number of r's significant at .05 level.
/XX Number of groups having N20 for which a validity coefficient was calculated

* Number of groups is sufficiently small that Median r may be misleading.

Table 17

Median Validities and Proportion Attaining Statistical Significance

Research Battery
(Cognitive Style Tests)

Curriculum Groups	Hidden Figures	Memory for Designs	Design Variations I	Design Variations II	Design Variations III	Estimation Questionnaire
College Parallel						
11 Liberal Arts						
12 Science and Pre-Engineering						
*13 Fine Arts	.35 2/3				.32 1/3	
14 Agriculture						
Occupational-Technical						
21 Science and Engineering			.26 2/6		.28 3/6	
22 Business	.26 6/12	.22 6/12	.32 8/12		.21 5/12	
*23 Health						
*24 Commercial Arts				.25 1/1	.32 1/1	
*25 Other			.68 1/1			
Occupational-Vocational						
*31 Mechanical		.40 1/1				
*32 Business		.56 1/1	.42 1/1		.35 1/1	
*33 Health						
*34 Art Skills						
General						
*41 General/Developmental						
51 Unclassified						

Notes: (1) Minimum criterion for inclusion in table is a statistically significant validity of .20 or better for 1/3 or more of the groups within that curriculum.

(2) Entries in cells are:
.XX Validity
XX/ Number of r's significant at .05 level.
/XX Number of groups having N20 for which a validity coefficient was calculated

* Number of groups is sufficiently small that Median r may be misleading.

Table 18

Median Validities and Proportion Attaining Statistical Significance

Research Battery, Continued
(General Information Tests)

Curriculum Groups	Technology	Health	Business	Service	Year 2000	Letter Groups	Biographical Inventory Academic Motivation
College Parallel							
11 Liberal Arts		.32 8/13	.20 6/13		.25 9/13	.23 8/13	
12 Science and Pre-Engineering						.24 2/6	.21 7/15
*13 Fine Arts		.31 1/3					
*14 Agriculture				.47 1/1			
Occupational-Technical							
21 Science and Engineering	.26 3/5		.25 2/5		.25 2/5		
22 Business		.29 7/11			.37 8/11	.37 9/11	.22 11/24
*23 Health		.56 1/2	.39 1/2	.47 1/2			
*24 Commercial Arts							
*25 Other			.37 1/1		.40 1/1		
Occupational-Vocational							
*31 Mechanical	.46 1/1						
*32 Business		.52 1/1	.54 1/1	.46 1/1			.26 2/3
*33 Health	.35 1/1	.42 1/1					
*34 Art Skills							
General							
*41 General/Developmental				.23 1/1			.21 1/3
51 Unclassified							

(See Notes on Table 15)

NOTE: The Biographical Inventory Vocational Motivation scale and the three scales of the Work Preference Test - People, Data, Things - are not included in this table since none of the median correlations met the criterion for inclusion.

of correlations is used. Consequently, a second kind of information was thought appropriate, namely the proportion of the total number of groups in which the correlation between test variable and criterion was statistically significant. For this purpose, a .05 level of significance was adopted.

If these two characteristics are considered as evidence of the validity of the test within a curriculum group, it is then possible to set a minimum arbitrary standard for each characteristic, and then see which tests have validity and for what curriculums.

To accomplish this, a rule was chosen on an a priori (reasoning by experience) basis that specified that (a) the median correlation within a curriculum group for the test in question be to .20 or above, and (b) that at least one-third of all of the observed validity coefficients within a curriculum area for the test in question must be both statistically significant and .20 or above. If both these rather modest rules were satisfied, then the validity coefficient could be regarded as sufficiently salient to encourage further examination of the results.

Tables I-VI in Appendix A give for each test, and within each of the 15 curriculum clusters, the median correlation, the number of groups studied, the range of the coefficients, and the number of coefficients that were statistically significant.

The most condensed summary of this information is provided in Table 14. Here an "x" is placed in a cell if the median validity equals or exceeds +.20, and if one-third or more of the validity coefficients are significant. Tables 15-18 present this information in more detail, in that the median correlations and the number of significant correlations for the number of groups studied (expressed as a ratio) are presented.

Referring to Table 14, it is possible to see in a very general way the curriculums in which a test seems to offer promise as a predictor, and those where it does not look promising. By reading down the columns one can infer something concerning which tests, considered separately, look promising as predictors for a given curriculum. The same information in greater detail may also be inferred from Tables 15-18.

A few summary comments about the results presented in Tables 14 and 15-18 may be helpful:

Placement Tests (Tables 14 and 15) - The wide applicability of the Reading, English and Mathematics tests is evident from the data. Only in college-parallel fine arts (Code 13), vocational art skills (Code 34), and to a lesser extent in vocational mechanics (Code 31) does success seem to depend to a smaller degree on these basic skills. With respect to the tests themselves, Spelling is clearly the weakest predictor. Although one cannot deny the educational importance of these skills, it is probably not desirable for work in technical and vocational areas to depend as heavily on these abilities as do college-parallel curriculums.

Special Abilities (Tables 14 and 16) - The validity of the special ability tests considered separately is modest. The spatial tests are predictive mainly in technical science areas (Code 21) and spatial and mechanical tests are predictive in vocational mechanical areas. Similarly, the perceptual clerical tests have some validity in technical business (Code 22), vocational business (Code 32), liberal arts (Code 11), agriculture (Code 14), and general - usually remedial - programs (Code 41). What do not appear are tests that are predictive of success in arts and health-related fields.

Cognitive Style Tests (Tables 14 and 17) - These instruments were included in the Research Battery, and are the most experimental. The number of groups in any one cell is generally small. However, the tendency of these tests to show validity within the business area (7 out of 12 cells) suggests that they may offer promise for further investigation.

Other Research Tests (Tables 14 and 18) - The General Information Tests appear to be most relevant to the technical and vocational curriculums. In most of these the appropriate subtest does appear to be predictive within the most relevant curriculums. However, there is considerable blurring in the sense that the business and health subtests do not appear distinguishable with regard to the pattern of validities. Both the Year 2000 (integration) and Letter Groups (induction) tests performed less impressively than in earlier studies with the business areas again appearing to be the most promising. The Academic Motivation scale of the Biographical Inventory also did not show great promise.

It should be noted, however, that some of these variables may actually be more useful as predictors when combined with others in a team; consequently, these individual validities are only quite partial indicators of the usefulness of the new tests. A multiple regression approach to prediction, with identification of efficient clusters of tests for various curriculums, is under study. Preliminary to that, some tentative information is available on the composite validity of the CGP tests from the individual studies done for each of the participating colleges' students.

Predictive Validity of Tests in Combination

As described in the first chapter, each participating institution received a report made on the predictive validity of the test instruments for their students. These validity studies were produced for curriculum groups, or combinations of groups designated by the college, with the restriction that a group contain a minimum of 100 "complete" data cases; "complete" is defined as all Core Battery scores and first-term grade averages. Thirty-three colleges had sufficient data to meet these conditions for a total of 51 group analyses.

There are some limitations in drawing other than tentative conclusions about the functioning of the test battery in the prediction of grade-average performance from these individual college validity studies. Sufficient data for validity studies were available for only a few curriculums; of the 14 possible curriculum areas, only six are represented, although additional studies of composite groups, that is, all students, students in college-parallel, or students in occupational-technical curriculums, are available. Research Battery test scores were not included, since only a portion of the colleges administered this battery. Thus, no information about how these tests function in combination is yet available. A further consideration is the number of variables used in the multiple regression equations. With the size of samples available, it would not have been defensible to include all 22 Core test scores as predictor variables; so a priori sets, containing the test variables that might be reasonably expected to be most useful, were established depending upon the curriculum under consideration.

Keeping these points in mind, the reader may wish to turn to Table 19, page 57. The results of the individual college studies are summarized here. The table presents the median of the multiple correlations (R) in each curriculum area represented, together with the range of the R's and the number of groups. Where high school record information was available, a second R based on its combination with test scores is also presented. For the purposes of illustration, the liberal arts row of the table is read as follows: 17 colleges had sufficient data in liberal arts to permit a validity study; the median multiple correlation between a combination of test scores (Set A) and freshman grade average was .43. Among this group of colleges, the predictive validity of the tests ranged from .29 to .60. Nine of the 17 colleges reported the high school record of their students (grade average or rank in class). Including the high school record as a predictor in addition to the Set A variables led to a median correlation of .50, with a range of .42 to .58.

The results in Table 19, although not available for all curriculums, are encouraging in that the multiple correlations with GPA for the curriculums examined are for the most part all near at least the .50 level and, with the addition of high school record, rise to about the .60 level. The technical-specialized curriculums seem a bit more predictable than the more heterogeneous liberal arts and business areas, but the difference is not great.

The next reasonable question is: How good is a multiple R in the .50 - .60 range? Without attempting to answer by statistical terms what is after all a matter of human judgment and application, the best answer to this question lies in a comparison of these data with those of other tests now used by junior colleges. Fortunately, for this comparison, a number of colleges chose to use the local predictor option available to report other test score data on their students and to include these variables in the validity studies. By far the most frequently reported was the Scholastic Aptitude Test (SAT-Verbal and Mathematical). Table 20, on page 58, demonstrates that the CGP battery gives more than a creditable showing when compared with the SAT.

Table 19

Summary of Multiple Correlations
Using Grade-Point Average Criterion

Curriculum Groups	Predictor Set A[a]				Predictor Set A Plus High School Achievement				Predictor Set B[b]				Predictor Set B & High School Achievement			
	N[c]	R Range Low	Hi	R Md	N	Range Low	Hi	Md	N	Range Low	Hi	Md	N	Range Low	Hi	Md
All Students	15	.27	.59	.44	7	.30	.64	.53								
College Parallel	3	.32	.39	.38	2	.39	.48									
Liberal Arts (11)	17	.29	.60	.43	9	.42	.58	.50								
Sci. & Pre-Eng. (12)									2	.39	.55		2	.56	.61	
Occupational-Technical									3	.44	.69	.53	2	.53	.70	
Sci. & Eng. (21)									4	.40	.70	.48	2	.51	.71	
Business (22)	5	.34	.65	.53	2	.60	.68									
Occupational-Vocational																
Mechanics									1		.38					
General/Developmental	1	.35	.48													

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[a] Set A = Reading, Vocabulary, Sentences, Spelling, Mathematics, Spatial Ability, Mechanical Ability, and Perceptual Ability

[b] Set B = Mathematics, Mechanical Ability, Spatial Ability, Perceptual Ability, English, Reading, Engineering Technology Interest (from CII)

[c] Number of groups.

2

Table 20

Comparison of Multiple Correlations of CGP Tests and High School Record versus SAT-V & M and High School Record in Predicting Freshman Grade Performance

Curriculum	No. of Groups	Median R for CGP	Median R for SAT	Ratio of CGP R Higher than SAT R
College-Parallel	1	.39	.37	1/1
Liberal Arts	9	.49	.40	7/9
Science & Pre-Eng'g.	1	.56	.46	1/1
Occupational-Technical	1	.51	.35	1/1
Science & Eng'g.	1	.51	.37	1/1
Business	1	34	.32	1/1
Combined Curriculums	3	.52	.51	2/3

As the table shows, CGP tests outdistanced the SAT in 14 of 17 cases for the most part by small increases in the multiple R. Similar comparisons, although too few in number to make firm conclusions, reveal that a composite of CGP tests is at least as effective in predicting freshman grade performance as ACT, SCAT, GATB, and other tests. Keeping in mind that the CGP research tests were not included in this comparison makes the outlook seem even brighter for the potential usefulness of the battery.

However encouraging these results appear, they are not intended to answer the research questions posed earlier. The final evaluation of the efficacy of the battery must await the differential prediction and curriculum sorting studies that are now under way.

CHAPTER V

Summary

The program, an effort of the College Board in association with Educational Testing Service and with the cooperation of many significant representatives of the junior college community, was conceived in 1966 in recognition of felt needs for improved guidance and placement instruments and services within this community. A strategy in which the stages in research, development, diffusion, and adoption were interwoven was adopted to maximize the possibility and immediacy of programmatic utilization. This report has attempted to provide a description of this program, the tests, the performance of students, and some preliminary results bearing on the question of predictive validity of the instruments within various curriculums.

Findings presented in this report are based on measures administered to approximately 24,000 students through the cooperation of 39 institutions in the fall of 1967. In general, the colleges and the students participating in Phase I appear to be representative of junior colleges and junior college students. Most of the institutions have a small- to medium-sized enrollment (500-2,000), maintain an open-door, or semi-open-door admission policy, and serve a predominantly nonresidential student body. In addition, the majority of these colleges (75 percent) are public comprehensive in control and in structure and are drawn from all geographic regions of the United States. Ninety percent of their students enter directly from high school, except for the vocational-technical institutes which serve a larger percentage (16 percent) of older students entering after military service or after one to two years of full-time employment.

In terms of socioeconomic background, there are some differences among the students enrolling in the three types of institutions. The private, public comprehensive, and vocational-technical, respectively, draw a successively smaller fraction of students from backgrounds that can be characterized, according to the indices used, as high socioeconomic: family income, father's occupation, and parents' education.

Distinct differences between students in the private junior colleges and the vocational-technical institutes confirm the clear emphasis of the latter group on entry into the labor market. In contrast, students in private junior colleges express more interest in continuing their education. These differences are confirmed over a range of questions varying from reason for attending the particular college, extracurricular interest, and part-time work plans, to expressing the kind of future life preferred. Since the public comprehensive colleges offer curriculums which span those in both of the two other types of instutitions, it is not surprising to see their students in the middle of the vocational-centered versus educational-centered dimension.

Striking differences in the patterns of performance of students in various curricular groups emerge from the Comparative Interest Index (CII) results. The fact that the interest profiles of students in a given area are very similar regardless of the type of institution, and quite different when comparisons are made among curriculums, gives strong support to the potential usefulness of such information in aiding students to make decisions about their courses of study. In addition, the results tend to support the nature of the CII scale; students in two-year technical programs score high on the engineering technology scale; students in health-related fields score high on the biology and home economics scale, and so on. This pattern is repeated with very few exceptions. A comparison of the performance patterns of students on the Core Battery tests yields similar, although not as clear, differentiations among curriculums.

The preliminary results contained in this report cannot alone be used to determine the effectiveness of the test battery in helping junior college students make realistic decisions about their courses of study and their vocations. The information presented in this report does show the test battery to be promising.

Taken individually, the Core Battery tests in reading, English, and mathematics appear to be widely applicable in predicting academic success within almost all of the curricular areas studied. Only in the college-parallel fine arts, and vocational-technical art skills curriculums does academic performance appear to be less dependent upon these basic skills.

The special abilities tests, considered separately, do not have the same wide applicability or potency in prediction; however, these tests do appear stronger in certain areas. The tests of spatial ability are predictive of performance in the technical science areas, the mechanical tests are predictive of performance in the vocational-mechanical areas, and, similarly, the perceptual-clerical tests have some validity in the business, liberal arts and agricultural curriculums.

Most of the tests included in the Research Battery do not appear, separately, to be very predictive of academic performance. Again, there is some promise in that the "right" tests have some predictive power in the "right" curriculums. However, the relatively small numbers of curricular groups for which pertinent data appears makes it especially important to preclude judgment until the full research analyses are available.

A summary of the multiple regression analyses (validity studies) performed for each institution yields the most favorable picture of the efficacy of the test battery in predicting academic performance. Although data were not available for many of the curricular areas within those represented, the multiple correlations of the Core Battery tests with grade average were in the moderate-to-high range (R circa .50). Adding a measure of high school performance led to an increase in the multiple correlation to about the .60 level. Further, a comparison between these results and the predictive power of other standardized tests, in combination, revealed that the CGP Core Battery was at least equal to any of the tests represented. Whether the tests from the CGP Research Battery might add to this result is speculative, but certainly well within the range of possibility.

A full evaluation of the first experimental Comparative Guidance and Placement Program must await the completion of the exhaustive research effort now under way. The preliminary results presented here do show promise that the program may help to serve, and serve well, some of the self-expressed needs of junior colleges and their students.

The second experimental phase of the project is presently under way with an expanded participation of 80 institutions testing approximately 55,500 students on a substantially revised battery.

APPENDIX A

Tables I, II, III, IV, V, VI

Appendix A - Table I

Performance by Various Curriculum Groups on the Comparative Interest Index

(Median and Range of Average Scores)

Curriculum Groups	No. Groups		Biology	English	Art	Math	Soc. Sci.	Sec'l	Phys. Sci.	For. Lang.	Music	Eng. Tech.	Home Ec.	Business
College Parallel														
11 Liberal Arts	27	Median	15.7	16.5	16.7	13.5	19.6	15.4	15.5	17.6	15.8	15.6	18.1	19.2
		Range	11.6/20.5	13.5/19.9	12.5/21.4	10.1/17.8	15.3/23.7	12.7/18.7	10.9/20.1	13.4/23.5	11.9/18.2	11.9/21.4	13.8/23.8	15.3/21.4
12 Science & Pre-Eng.	15	Median	18.8	12.7	14.5	19.0	16.3	12.7	21.6	14.8	13.8	20.5	15.0	16.0
		Range	13.0/21.7	11.1/16.1	12.2/18.0	13.3/25.1	13.6/18.1	10.5/14.6	17.8/24.1	11.3/17.9	11.7/15.0	15.7/26.1	9.7/20.0	13.6/18.7
13 Fine Arts	5	Median	14.5	17.2	26.5	9.1	16.7	13.3	13.1	16.5	18.1	17.7	19.2	15.1
		Range	11.3/15.3	14.8/18.4	23.2/28.6	8.4/11.6	12.9/17.7	8.4/15.2	11.9/15.8	14.8/18.1	16.6/20.4	16.1/20.9	17.4/21.2	10.8/16.3
14 Agriculture	2	Median												
		Range	21.6/22.0	10.1/11.0	8.5/10.9	12.3/14.2	15.4/16.8	11.5/12.0	18.0/20.1	9.7/11.0	10.0/10.8	18.8/21.0	11.3/14.9	17.2/17.6
Occupational-Technical														
21 Science & Eng.	16	Median	14.5	10.5	14.4	20.2	14.9	13.9	20.5	13.0	12.7	25.8	13.7	17.4
		Range	10.7/18.4	8.5/17.7	11.9/21.1	12.8/23.4	11.7/18.9	10.6/18.6	14.9/23.6	9.0/19.3	8.7/17.5	14.4/27.2	10.9/22.5	13.6/19.4
22 Business	24	Median	12.3	14.1	15.6	13.4	16.3	23.9	11.2	15.6	13.5	13.9	21.0	23.2
		Range	10.2/20.5	10.4/16.9	11.5/20.5	8.0/19.1	12.4/20.8	17.2/26.4	7.6/20.0	10.2/18.4	10.4/17.1	9.8/19.7	15.3/23.3	18.5/25.7
23 Health	7	Median	20.8	16.3	16.9	11.8	17.5	15.5	16.6	19.7	16.0	12.4	24.1	15.6
		Range	19.3/25.3	14.2/19.2	14.3/21.8	6.4/14.7	13.7/20.5	11.5/18.2	11.5/18.2	14.5/22.8	15.2/18.4	9.6/16.6	21.4/27.5	13.1/18.7
24 Commercial Arts	2	Median												
		Range	11.5/13.2	10.5/18.7	18.8/23.5	6.1/13.9	9.8/17.3	11.1/14.4	11.4/12.6	10.6/15.8	10.9/16.3	15.3/19.4	16.7/16.9	13.9/15.4
25 Other	6	Median	13.1	12.8	14.8	12.1	16.6	14.1	14.5	14.0	13.0	17.2	14.5	16.7
		Range	10.2/17.6	11.0/13.5	9.7/19.1	7.7/20.2	12.2/18.2	11.5/14.9	10.4/24.7	13.5/15.7	7.8/14.9	13.3/25.0	11.0/18.6	14.0/18.1
Occupational-Vocational														
31 Mechanical	4	Median	13.0	7.0	10.9	12.8	13.3	12.5	15.6	8.7	9.7	24.5	12.4	14.8
		Range	11.3/15.8	6.1/9.3	8.7/16.9	12.3/16.7	11.4/14.8	11.7/13.7	13.5/18.8	7.3/9.5	7.8/10.8	22.1/25.8	11.1/13.4	13.3/16.7
32 Business	3	Median	11.0	12.8	16.0	11.2	14.1	27.0	8.9	15.7	13.7	9.7	26.4	22.7
		Range	8.8/11.5	12.4/14.7	13.5/16.3	11.1/12.3	12.7/16.0	25.8/27.2	8.8/9.0	12.3/16.9	10.7/15.7	9.2/12.0	22.8/27.7	22.5/24.5
33 Health	3	Median	22.0	16.5	16.5	9.3	15.1	17.0	17.5	20.4	17.3	12.7	26.8	17.0
		Range	21.7/23.5	13.5/17.1	15.2/18.5	7.8/17.8	12.8/17.7	15.9/20.5	11.0/18.1	15.4/21.4	16.1/19.5	8.9/13.3	25.4/27.2	13.0/19.1
34 Art Skills	1	Median	11.1	11.6	15.1	9.8	13.5	12.5	10.3	11.1	12.6	16.9	16.9	14.1
		Range												
General														
41 General/Develop.	3	Median	16.3	15.1	16.1	12.9	17.8	15.8	15.0	16.1	15.1	15.6	17.7	17.8
		Range	15.5/17.1	14.9/17.3	14.9/16.9	11.6/13.8	16.9/20.2	14.2/17.0	14.3/17.8	14.7/19.5	13.8/16.5	14.5/16.8	17.7/19.0	17.5/18.7
51 Unclassified	8	Median	14.6	14.6	16.9	12.0	15.2	15.3	13.6	17.7	15.1	15.9	17.6	17.1
		Range	12.4/22.8	11.0/17.8	13.0/18.0	10.7/13.6	14.3/20.0	13.2/16.5	11.8/19.5	10.8/20.4	12.4/17.0	14.6/17.4	14.4/24.2	15.5/19.0

Appendix A - Table II

Median and Range of Average Scores
on Core Battery Tests

TESTS		College Parallel				Occupational-Technical					Occupational-Vocational					
		Lib. Arts	Sci. & Pre-Eng.	Fine Arts	Agric.	Sci. & Eng.	Business	Health	Comm. Arts	Other	Mech.	Business	Health	Art Skills	General/ Devel.	Unclass.
		11	12	13	14	21	22	23	24	25	31	32	33	34	41	51
Reading	Median	51.2	52.8	49.9		50.2	48.5	52.5		49.3	45.5	44.1	41.5		48.5	47.6
	# Groups	27	15	5	2	16	24	7	2	6	4	3	3	1	3	11
	Range Low	42.5	48.8	48.8	48.4	46.7	39.9	46.8	48.8	44.2	41.2	41.2	38.5	41.4	39.2	41.2
	High	54.6	56.6	51.5	51.7	55.4	55.4	58.0	51.6	52.3	49.7	47.0	50.8		49.8	54.7
Vocabulary	Median	51.4	51.3	51.5		48.5	48.0	55.5		48.5	44.5	42.9	44.6		48.6	48.5
	# Groups	27	15	5	2	16	24	7	2	6	4	3	3	1	3	11
	Range Low	46.5	46.8	47.5	44.9	45.4	41.9	48.4	47.6	46.8	39.8	40.9	42.8	42.3	41.9	36.6
	High	55.3	56.1	54.9	50.5	53.6	55.2	57.1	53.5	52.1	46.4	43.8	49.3		51.4	56.8
Verbal	Median	51.5	52.6	51.2		49.1	48.2	54.6		49.0	44.5	43.0	42.3		48.4	47.7
	# Groups	27	15	5	2	16	24	7	2	6	4	3	3	1	3	11
	Range Low	43.8	48.5	48.4	46.6	47.0	39.8	47.4	48.0	44.9	39.5	39.8	39.4	40.8	39.3	38.0
	High	55.2	57.3	53.5	51.5	55.3	56.1	58.6	52.8	52.7	48.1	44.9	50.3		50.8	56.5
Sentences	Median	51.7	52.5	51.1		47.5	51.2	55.0		46.8	44.4	50.6	44.5		47.8	46.7
	# Groups	27	15	5	2	16	24	7	2	6	4	3	3	1	3	11
	Range Low	44.3	46.6	49.4	47.3	42.8	46.5	47.4	47.3	45.8	38.3	45.3	41.9	41.6	42.7	43.6
	High	55.8	57.4	55.0	50.2	53.5	57.3	59.4	53.7	48.5	46.7	53.7	53.6		51.8	53.6
Spelling	Median	51.2	49.8	49.7		48.0	51.3	54.0		47.2	42.9	48.6	49.4		48.0	48.6
	# Groups	27	15	5	2	16	24	7	2	6	4	3	3	1	3	11
	Range Low	47.0	46.5	44.9	45.3	43.9	45.2	49.8	46.6	45.5	40.9	45.9	40.3	44.0	46.4	46.1
	High	54.3	55.1	52.5	48.5	53.4	54.8	56.7	54.2	47.4	43.7	50.8	52.6		49.5	53.7
English	Median	51.7	51.9	50.9		47.1	50.4	55.9		46.8	43.4	47.4	43.8		47.7	47.1
	# Groups	27	15	5	2	16	24	7	2	6	4	3	3	1	3	11
	Range Low	45.6	46.8	47.2	45.1	43.7	45.4	47.9	46.6	45.9	37.1	43.2	41.0	40.8	42.1	43.6
	High	56.0	57.7	55.7	49.8	53.5	56.0	59.7	54.6	48.9	44.4	49.7	52.6		51.4	55.5
Mathematics	Median	50.6	57.6	47.3		52.9	46.9	46.5		48.2	46.4	41.5	39.0		47.6	47.3
	# Groups	27	15	5	2	16	24	7	2	6	4	3	3	1	3	11
	Range Low	41.6	48.6	44.3	47.6	47.9	41.0	42.8	50.4	41.8	38.7	40.8	38.7	39.8	41.2	42.5
	High	56.7	63.8	49.6	52.6	59.8	52.0	53.0	51.3	50.8	52.4	45.3	45.3		48.0	56.3
*Spatial Reasoning	Median	48.7	55.0	50.4		56.2	47.0	46.3		50.5	52.2	44.6	45.0		46.2	48.7
	# Groups	26	14	5	2	15	23	7	1	6	4	3	3	1	3	10
	Range Low	45.0	48.1	47.2	49.4	50.3	42.4	44.6	56.7	46.5	47.3	44.0	41.0	50.4	44.6	47.7
	High	53.4	60.2	54.1	50.0	63.8	54.4	52.0		60.7	58.2	46.5	46.7		49.2	56.5
*Mechanical Ability	Median	49.6	55.6	48.4		58.9	46.8	44.7		53.4	59.1	42.2	39.8		48.0	50.8
	# Groups	25	14	5	2	14	22	7	1	6	4	3	3	1	3	10
	Range Low	43.9	50.6	46.8	58.2	46.7	40.8	40.6	53.0	45.2	57.9	41.2	39.4	52.9	45.2	46.0
	High	52.3	58.9	52.7	58.4	62.6	53.8	47.6		61.0	61.9	44.2	41.8		50.2	58.3
*Perceptual Efficiency	Median	50.8	52.1	50.4		49.2	51.3	52.8		51.2	46.3	49.8	43.2		51.0	48.9
	# Groups	26	14	5	2	15	23	7	1	6	4	3	3	1	3	10
	Range Low	44.9	48.3	47.1	44.5	44.6	45.7	50.2		45.3	33.8	44.5	40.1		49.2	46.3
	High	61.7	55.5	52.4	49.8	55.8	58.3	59.4	51.2	55.3	51.4	51.1	50.5	38.7	52.9	53.8

*Data not available on components of Special Ability Tests.

Appendix A - Table III

Median Correlations of CGP Tests With Freshman Grade Average

Placement Tests

TESTS		College Parallel				Occupational-Technical					Occupational-Vocational				General/ Devel.	Unclass.
		Lib. Arts	Sci. & Pre-Eng.	Fine Arts	Agric.	Sci. & Eng.	Business	Health	Comm. Arts	Other	Mech.	Business	Health	Art Skills		
		11	12	13	14	21	22	23	24	25	31	32	33	34	41	51
Reading	Median r	.32	.29	.21		.31	.36	.39		.33	.14	.14	.31		.25	.20
	# Groups	27	15	5	2	16	24	7	2	6	4	3	3	1	3	11
	Range Low	.13	-.10	.13	.37	.05	-.02	.01	.22	.10	.07	.02	.31	-.04	.17	-.19
	Range High	.70	.49	.43	.61	.52	.52	.63	.36	.45	.44	.46	.47		.26	.36
	# Sig. r's[a]	23/0	8/0	1/0	2/0	8/0	21/0	5/0	1/0	4/0	1/0	1/0	2/0	0/0	1/0	4/0
Vocabulary	Median r	.34	.24	.23		.22	.32	.42		.33	.16	.31	.30		.18	.23
	# Groups	27	15	5	2	16	24	7	2	6	4	3	3	1	3	11
	Range Low	.05	-.18	.08	.42	-.20	-.18	.33	.02	.18	.10	.16	.21	.02	.10	-.08
	Range High	.61	.49	.27	.44	.48	.55	.69	.17	.44	.26	.52	.50		.29	.38
	# Sig. r's[a]	24/0	7/0	0/0	2/0	7/0	17/0	5/0	1/0	3/0	1/0	1/0	2/0	0/0	1/0	4/0
Verbal	Median r	.36	.31	.22		.32	.40	.51		.40	.20	.25	.38		.25	.22
	# Groups	27	15	5	2	16	24	7	2	6	4	3	3	1	3	11
	Range Low	.17	.07	.18	.43	.02	-.01	.18	.23	.28	.15	.11	.31	-.02	.22	-.15
	Range High	.68	.53	.43	.60	.50	.60	.61	.37	.45	.35	.52	.56		.26	.41
	# Sig. r's[a]	24/0	11/0	1/0	2/0	8/0	18/0	5/0	1/0	4/0	1/0	1/0	2/0	0/0	2/0	4/0
Sentences	Median r	.33	.32	.35		.25	.41	.21		.42	.31	.27	.32		.23	.27
	# Groups	27	15	5	2	16	24	7	2	6	4	3	3	1	3	11
	Range Low	.11	-.01	-.11	.28	-.42	.12	-.04	.29	.11	.20	.02	.10	.01	.09	-.08
	Range High	.70	.54	.46	.47	.52	.62	.61	.61	.67	.42	.48	.33		.32	.44
	# Sig. r's[a]	25/0	10/0	3/0	1/0	11/0	21/0	2/0	2/0	5/0	4/0	1/0	1/0	0/0	1/0	6/0
Spelling	Median r	.24	.21	.11		.18	.30	.38		.14	.12	.29	.18		.15	.22
	# Groups	27	15	5	2	16	24	7	2	6	4	3	3	1	3	11
	Range Low	.12	-.05	-.03	.22	-.02	-.02	.00	.09	.06	-.39	.18	.02	-.09	.00	-.16
	Range High	.58	.41	.32	.42	.58	.45	.65	.44	.41	.26	.32	.30		.23	.53
	# Sig. r's[a]	17/0	5/0	0/0	1/0	4/0	14/0	4/0	1/0	2/0	1/1	1/0	0/0	0/0	0/0	5/0
English	Median r	.40	.29	.30		.31	.48	.49		.35	.26	.43	.38		.23	.27
	# Groups	27	15	5	2	16	24	7	2	6	4	3	3	1	3	11
	Range Low	.15	.03	.01	.38	-.33	.05	.23	.20	.23	.06	.11	.13	-.01	.17	-.07
	Range High	.75	.56	.43	.57	.56	.61	.68	.62	.55	.34	.47	.45		.28	.48
	# Sig. r's[a]	27/0	8/0	2/0	2/0	9/0	20/0	5/0	2/0	4/0	4/0	2/0	2/0	0/0	1/0	6/0
Mathematics	Median r	.25	.25	.24		.41	.26	.33		.28	.24	.40	.24		.11	.14
	# Groups	27	15	5	2	16	24	7	2	6	4	3	3	1	3	11
	Range Low	-.03	.07	.10	.16	.06	.01	-.13	.09	.23	.17	.03	.06	.03	.04	-.29
	Range High	.58	.66	.44	.68	.59	.51	.61	.17	.46	.46	.50	.36		.26	.34
	# Sig. r's[a]	15/0	9/0	1/0	1/0	11/0	14/0	4/0	0/0	3/0	4/0	2/0	1/0	0/0	1/0	4/0

[a] Number of correlations above .20 and significant at .05 level:

x/y
x = number significant and positive
y = number significant and negative

Median Correlations of CGP Tests With Freshman Grade Average

Special Ability Tests

TESTS		College Parallel				Occupational-Technical					Occupational-Vocational				General/ Devel.	Unclass.
		Lib. Arts 11	Sci. & Pre-Eng. 12	Fine Arts 13	Agric. 14	Sci. & Eng. 21	Business 22	Health 23	Comm. Arts 24	Other 25	Mech. 31	Business 32	Health 33	Art Skills 34	41	51
Choosing a Path	Median r	.00	.00	-.01		.15	.04	-.03		.04	.24	.15	.16		.01	.08
	# Groups	26	14	5	2	15	23	7	2	6	4	3	3	1	3	10
	Range Low	-.27	-.20	-.36	.00	-.09	-.47	-.14	.00	.10	-.32	.07	.10	.16	-.11	-.29
	Range High	.22	.27	.14	.22	.39	.36	.46	.02	.41	.41	.33	.26		.12	.18
	# Sig. r's[a]	0/1	1/0	0/0	0/0	5/0	4/1	1/1	0/0	1/0	2/0	0/0	1/0	0/0	0/0	0/0
Intersections	Median r	.10	.05	.10		.26	.23	.18		.06	.15	.07	.14		.11	.08
	# Groups	26	14	5	2	15	23	7	1	6	4	3	3	1	3	10
	Range Low	-.31	-.19	-.05	.12	-.02	-.30	-.06	.00	-.08	-.05	-.09	-.13	.04	-.04	-.24
	Range High	.49	.28	.24	.22	.51	.48	.29	.05	.33	.20	.25	.28		.11	.25
	# Sig. r's[a]	2/1	0/0	0/0	0/0	6/0	9/1	0/0	0/0	1/0	1/0	0/0	1/0	0/0	0/0	0/0
Spatial	Median r	.05	.06	.00		.26	.14	.13		.10	.24	.20	.18		.07	.10
	# Groups	26	14	5	2	15	23	7	1	6	4	3	3	1	3	10
	Range Low	-.32	-.15	-.20	.09	.03	-.35	-.05	.00	-.11	-.50	.15	-.01	.12	-.14	-.35
	Range High	.43	.22	.21	.20	.42	.50	.50		.45	.32	.21	.35		.15	.18
	# Sig. r's[a]	0/1	3/0	0/0	0/0	5/0	5/0	1/0	0/0	1/0	2/0	0/0	1/0	0/0	0/0	0/0
Tool Knowledge	Median r	-.11	-.16	-.15		.16	-.08	.04		-.06	.28	.06	.20		-.15	-.12
	# Groups	25	14	5	2	14	22	7	1	6	4	3	3	1	3	10
	Range Low	-.38	-.36	-.63	.10	-.25	-.37	-.26	-.21	-.20	.12	.01	.19	.01	-.31	-.28
	Range High	.34	.15	.33		.29	.18	.21	.00	.17	.40	.09	.27		-.10	.16
	# Sig. r's[a]	0/5	0/3	0/3	0/0	1/1	0/5	0/0	0/0	0/0	3/0	0/0	0/0	0/0	0/1	0/0
Mechanical Movements	Median r	.06	.13	.10		.18	.10	.28		.13	.31	.15	-.05		.05	.08
	# Groups	25	14	5	2	14	22	7	1	6	4	3	3	1	3	10
	Range Low	-.11	-.13	-.04	.15	-.05	-.18	.05	.00	.04	.20	-.16	-.05	.25	-.24	-.33
	Range High	.22	.34	.28		.43	.34	.42	.13	.24	.48	.23	.41		.09	.22
	# Sig. r's[a]	0/0	0/0	0/0	0/0	5/0	1/0	2/0	0/0	0/0	3/0	0/0	1/0	1/0	1/0	1/0
Mechanical Ability	Median r	-.08	-.08	-.14		.21	-.03	.18		.04	.36	.06	.24		-.16	-.06
	# Groups	25	14	5	2	14	22	7	1	6	4	3	3	1	3	10
	Range Low	-.36	-.26	-.62	.15	-.17	-.32	-.11	-.14	-.16	.17	.05	.15	.08	-.26	-.26
	Range High	.39	.25	.35	.17	.35	.19	.31	.00	.17	.53	.10	.33		-.10	.14
	# Sig. r's[a]	0/2	0/1	1/1	0/0	4/0	0/4	0/0	0/0	0/0	3/0	0/0	0/0	0/0	0/1	0/0
Letters	Median r	.22	.18	.18		.24	.18	.37		.16	-.06	.21	.01		.16	.16
	# Groups	27	15	5	2	16	24	7	2	6	4	3	3	1	3	11
	Range Low	-.11	-.25	.07	.30	-.37	-.08	.07	.00	.03	-.20	.10	-.11	.00	.09	-.21
	Range High	.40	.31	.48	.37	.57	.51	.50	.40	.52	.23	.54	.28		.32	.27
	# Sig. r's[a]	12/0	2/0	2/0	1/0	4/0	8/0	3/0	1/0	2/0	1/0	1/0	0/0	0/0	1/0	3/0
Symbols	Median r	.19	.13	.27		.15	.32	.13		.04	.04	.47	.12		.24	.17
	# Groups	26	14	5	2	15	23	7	1	6	4	3	3	1	3	11
	Range Low	-.06	-.19	-.02	.15	-.12	.10	-.02	.00	-.11	-.05	.17	.12	-.01	.17	-.54
	Range High	.43	.35	.37	.32	.40	.52	.32	.24	.27	.16	.58	.23		.24	.25
	# Sig. r's[a]	9/0	3/0	2/0	0/0	4/0	12/0	0/0	0/0	1/0	0/0	2/0	0/0	0/0	2/0	3/0
Perceptual	Median r	.22	.16	.25		.21	.27	.24		.16	-.02	.43	.01		.23	.14
	# Groups	26	14	5	2	15	23	7	1	6	4	3	3	1	3	10
	Range Low	-.05	-.17	.03	.28	-.33	.11	.10	.00	-.18	-.10	.23	.00	.00	.14	-.39
	Range High	.45	.34	.54	.38	.38	.49	.49	.34	.38	.24	.54	.27		.33	.31
	# Sig. r's[a]	12/0	4/0	1/0	1/0	3/0	12/0	1/0	0/0	2/0	0/0	2/0	0/0	0/0	2/0	4/0

[a] Number of correlations above .20 and significant at .05 level: x/y, x = number significant and positive, y = number significant and negative

Appendix A - Table V

Median Correlations of CGP Tests With Freshman Grade Average

Cognitive Style Tests

		College Parallel				Occupational-Technical					Occupational-Vocational					
		Lib. Arts	Sci. & Pre-Eng.	Fine Arts	Agric.	Sci. & Eng.	Business	Health	Comm. Arts	Other	Mech.	Business	Health	Art Skills	General/ Devel.	Unclass.
TESTS		11	12	13	14	21	22	23	24	25	31	32	33	34	41	51
Hidden Figures	Median r	.12	.17	.35		.09	.26									-.16
	# Groups	14	7	3	1	6	12	2	1	1	1	1	1	0	1	5
	Range Low	-.05	-.02	-.01	.26	-.18	-.01	-.09	.13	.12	.00	.07	-.02		.00	-.29
	Range High	.29	.39	.44		.28	.57	.26								.13
	# Sig. r's[a]	1/0	0/0	2/0	0/0	0/0	6/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Design for Memory	Median r	.15	.14	.26		.16	.22									.13
	# Groups	14	7	3	1	6	12	2	1	1	1	1	1	0	1	5
	Range Low	.00	.03	.10	.09	-.35	.11	.09	.15	.31	.40	.56	.08		.00	-.21
	Range High	.39	.18	.28		.57	.48	.45								.35
	# Sig. r's[a]	5/0	0/0	0/0	0/0	2/1	6/0	0/0	0/0	0/0	1/0	1/0	0/0	0/0	0/0	0/0
Design Variations I	Median r	.18	.18	.12		.26	.32									.07
	# Groups	14	7	3	1	6	12	2	1	1	1	1	1	0	1	5
	Range Low	.14	.05	.04	.03	-.19	.15	-.01	.14	.68	.18	.42	.08		.04	-.03
	Range High	.48	.27	.36		.37	.52	.05								.32
	# Sig. r's[a]	4/0	1/0	0/0	0/0	2/0	8/0	0/0	0/0	1/0	1/0	1/0	0/0	0/0	0/0	1/0
Design Variations II	Median r	.08	.20	.04		.10	.16									.12
	# Groups	14	7	3	1	6	12	2	1	1	1	1	1	0	1	5
	Range Low	-.03	-.01	.02	.34	.01	-.17	.20	.25	.32	.27	.19	.09		.17	-.22
	Range High	.31	.39	.12		.24	.38	.22								.22
	# Sig. r's[a]	2/0	0/0	0/0	0/0	1/0	1/0	0/0	1/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Design Variations III	Median r	.17	.09	.32		.28	.21									.13
	# Groups	14	7	3	1	6	12	2	1	1	1	1	1	0	1	5
	Range Low	.01	.00	.02	-.28	.08	.09	-.19	.32	.17	-.16	.35	-.01		.10	-.22
	Range High	.34	.11	.44		.47	.49	.09								.38
	# Sig. r's[a]	4/0	0/0	1/0	0/0	3/0	5/0	0/0	1/0	0/0	0/0	1/0	0/0	0/0	0/0	1/0
Estimation Questionnaire	Median r	.01	-.04	-.05		.01	-.04									.02
	# Groups	13	6	3	1	5	11	2		1	1	1	1	0	1	5
	Range Low	-.13	-.27	-.09	-.15	-.09	-.37	-.23	.00	.22	.03	.11	.05		-.14	-.29
	Range High	.29	.19	.09		.27	+.17	-.06								.22
	# Sig. r's[a]	0/0	0/0	0/0	0/0	1/0	0/1	0/0		0/0	0/0	0/0	0/0	0/0	0/0	0/0

[a] Number of correlations above .20 and significant at .05 level:

x/y
x = number significant and positive
y = number significant and negative

Median Correlations of CGP Tests With Freshman Grade Average

Other Research Tests

TESTS		College Parallel				Occupational-Technical					Occupational-Vocational					
		Lib. Arts	Sci. & Pre-Eng.	Fine Arts	Agric.	Sci. & Eng.	Business	Health	Comm. Arts	Other	Mech.	Business	Health	Art Skills	General/ Devel.	Unclass.
		11	12	13	14	21	22	23	24	25	31	32	33	34	41	51
General Information																
Technology	Median r	.08	.10	.22	.29	.26	.06			.26	.46	.38	.35		-.19	.09
	# Groups	13	6	3	1	5	11	2	0	1	1	1	1	0	1	5
	Range Low	-.01	-.18	-.20		.15	-.13	-.02								-.40
	Range High	.48	.24	.30		.62	.32	.08								.22
	# Sig. r's[a]	2/0	0/0	0/0	0/0	3/0	0/0	0/0	0/0	0/0	1/0	0/0	1/0	0/0	0/0	1/0
Health	Median r	.32	.06	.31	.54	.16	.29			.23	.36	.52	.42		.20	.12
	# Groups	13	6	3	1	5	11	2	0	1	1	1	1	0	1	5
	Range Low	-.03	-.17	.26		.01	-.02	-.01								-.08
	Range High	.53	.37	.32		.26	.43	.56								.30
	# Sig. r's[a]	8/0	2/0	1/0	1/0	1/0	7/0	1/0	0/0	0/0	0/0	1/0	1/0	0/0	0/0	0/0
Business	Median r	.20	.15	.23	.25	.25	.21			.37	-.01	.54	.24		.00	.04
	# Groups	13	6	3	1	5	11	2	0	1	1	1	1	0	1	5
	Range Low	.06	-.24	-.15		.10	-.03	.04								-.09
	Range High	.68	.22	.24		.52	.32	.39								.32
	# Sig. r's[a]	6/0	0/0	0/0	0/0	2/0	3/0	1/0	0/0	1/0	0/0	1/0	0/0	0/0	0/0	1/0
Public Service	Median r	.17	.12	.11	.47	.16	.09			.22	.28	.46	.20		.23	.15
	# Groups	13	6	3	1	5	11	2	0	1	1	1	1	0	1	5
	Range Low	.06	-.28	-.07		.09	-.19	-.05								-.03
	Range High	.35	.19	.18		.52	.36	.47								.22
	# Sig. r's[a]	4/0	0/0	0/0	1/0	1/0	0/0	1/0	0/0	0/0	0/0	1/0	0/0	0/0	1/0	0/0
Year 2000	Median r	.25	.18	.18	.12	.25	.37			.40	.14	.34	.28		.10	.12
	# Groups	13	6	3	1	5	11	2	0	1	1	1	1	0	1	5
	Range Low	.08	.05	.12		-.38	.09	.12								-.17
	Range High	.69	.44	.37		.38	.54	.24								.29
	# Sig. r's[a]	9/0	3/0	1/0	0/0	2/0	8/0	0/0	0/0	1/0	0/0	0/0	0/0	0/0	0/0	1/0
Letter Groups	Median r	.23	.24	.11	-.06	.14	.37			.32	.24	.36	.18		.07	.01
	# Groups	13	6	3	1	5	11	2	0	1	1	1	1	0	1	5
	Range Low	.08	-.03	.08		-.18	.04	-.10								-.29
	Range High	.65	.33	.46		.21	.53	.23								.43
	# Sig. r's[a]	8/0	2/0	1/0	0/0	0/0	9/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	1/0
Vocational Motivation	Median r	-.04	-.02	.00		.03	.07	-.16		.10	-.01	.02	.03	.23	.06	-.07
	# Groups	27	15	5	2	16	24	7	2	6	4	3	3	1	3	7
	Range Low	-.17	-.26	-.27	-.16	-.42	-.37	-.23	-.15	-.31	-.08	-.02	-.03		.03	-.31
	Range High	.18	.11	.18	.01	.30	.44	.67	-.03	.39	.13	.09	.12		.10	.18
	# Sig. r's[a]	0/0	0/0	0/0	0/0	1/0	2/1	1/0	0/0	1/0	0/0	0/0	0/0	0/0	0/0	1/0
Academic Motivation	Median r	.14	.21	.13		.14	.22	.07		.14	.00	.26	.24	.04	.21	.08
	# Groups	27	15	5	2	16	24	7	2	6	4	3	3	1	3	8
	Range Low	-.02	-.16	-.25	.16	-.16	-.04	-.07	-.11	-.19	-.08	.15	.16		.17	-.42
	Range High	.42	.44	.31	.23	.31	.49	.27	.13	.24	.06	.49	.43		.22	.41
	# Sig. r's[a]	4/0	7/0	0/0	0/0	3/0	11/0	0/0	0/0	0/0	0/0	2/0	0/0	0/0	1/0	1/1

[a] Number of correlations above .20 and significant at .05 level: x/y, x = number significant and positive, y = number significant and negative

Work Preference		11	12	13	14	21	22	23	24	25	31	32	33	34	41	51
People	Median r	.11	.13	-.09		-.13	.08									.07
	# Groups	14	7	3	1	6	12	2	1	1	1	1	1	0	1	5
	Range Low	.03	-.34	-.27	.21	-.41	-.20	-.31	.27	.15	.19	-.04	.12		.14	-.23
	Range High	.30	.20	.43		.04	.39	.15								.39
	# Sig. r's	1/0	0/0	1/0	0/0	0/0	2/0	0/0	1/0	0/0	0/0	0/0	0/0	0/0	0/0	1/0
Data	Median r	.04	.03	.09		.03	.00									.03
	# Groups	14	7	3	1	6	12	2	1	1	1	1	1	0	1	5
	Range Low	-.15	-.50	-.10	.27	-.24	-.30	-.13	.42	.35	.37	.33	.19		-.11	-.19
	Range High	.20	.35	.42		.16	.49	.20								.30
	# Sig. r's	0/0	1/1	1/0	0/0	0/0	3/0	0/0	1/0	1/0	1/0	0/0	0/0	0/0	0/0	0/0
Things	Median r	-.17	.06	-.18		.08	-.14									-.16
	# Groups	14	7	3	1	6	12	2	1	1	1	1	1	0	1	3
	Range Low	-.33	-.52	-.22	-.22	-.19	-.34	-.38	.14	.08	.06	.04	-.12		-.28	-.21
	Range High	.00	.09	-.10		.23	.11	.10								.12
	# Sig. r's	0/3	0/2	0/0	0/0	0/0	0/2	0/1	0/0	0/0	0/0	0/0	0/0	0/0	0/1	0/0

[a] Number of correlations above .20 and significant at .05 level: x/y, x = number significant and positive, y = number significant and negative

APPENDIX B

Curriculum Classification Form

COMPARATIVE GUIDANCE AND PLACEMENT PROGRAM

Curriculum Classification Form

Form 1, Phase II

Page 1 of___Pages
(Cover Page)

Name of Institution________________________________
(Please Print)

I. Biographical Inventory Subgroups

Subgroup Name: Code
1.______________________________ B1
2.______________________________ B2
3.______________________________ B3
4.______________________________ B4

Institutional Code:
☐ Private Junior College
☐ Vocational-Technical Institute
☐ Public Comprehensive Community College

Institutional Number: ________
ETS Use Only

II. Curriculum Classifications

Unclassified (Code 51)

		COLLEGE PARALLEL				OCCUPATIONAL - TECHNICAL					OCCUPATIONAL - VOCATIONAL				GENERAL
For ETS Use STD. NAME	Curriculum Col.A	(11) Lib. Arts Col.B	(12) Sc. & Pre-Eng. Col.C	(13) Fine Arts Col.D	(14) Agric. Col.E	(21) Sc. & Eng. Col.F	(22) Business Col.G	(23) Health Col.H	(24) Comm. Arts Col.J	(25) Other Col.K	(31) Mechanics Col.L	(32) Business Col.M	(33) Health Col.N	(34) Art Skills Col.O	(41) General/ Dev'mental Col.P
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APPENDIX C

Advisory Committees
Phase I and Phase II

ADVISORY COMMITTEE ON THE DEVELOPMENT OF TWO-YEAR COLLEGE PROGRAMS

(Phase I)

Dr. Jane Matson, Specialist in Guidance, American Association of Junior Colleges, Chairman

Dr. Ernest Berg, Peralta Junior College District, Oakland, California

Dr. Clyde E. Blocker, President, Harrisburg Area Community College, Harrisburg, Pennsylvania

Dr. Lewis Fibel, Specialist in Occupational Measurement, American Association of Junior Colleges

Dr. Joseph W. Fordyce, President, Santa Fe Junior College, Gainesville, Florida

Dr. Lawrence E. Fox, Assistant Director, Massachusetts Advisory Council on Education, Boston, Massachusetts

Mr. Jerry Girdner, Dean of Students, West Valley College, Campbell, California

Dr. George Mehallis, Director, Technical, Vocational and Semi-Professional Studies, Miami-Dade Junior College, Miami, Florida

Dr. James H. Nelson, President, Waubonsee Junior College, Aurora, Illinois

Dr. Terry O'Banion, Assistant Professor of Higher Education, University of Illinois, Urbana, Illinois

Dr. Alfred M. Philips, Vice President, Dallas County Junior College District, Dallas, Texas

Dr. Max R. Raines, Associate Professor of Higher Education, Michigan State University, East Lansing, Michigan

Mr. William Robbins, Dean of Students, Mohawk Valley Community College, Utica, New York

Dr. Alice Thurston, Dean of Students, Cuyahoga Community College, Cleveland, Ohio

Dr. Fred L. Wellman, Assistant Director, State Department of Community Colleges, Richmond, Virginia

ADVISORY COMMITTEE FOR THE COMPARATIVE GUIDANCE AND PLACEMENT PROGRAM

(Phase II)

Dr. Jane E. Matson, Professor of Education, School of Education, California State College at Los Angeles, California, Chairman

Mr. Salvatore C. Campanile, Dean of Students, Mercer County Community College, Trenton, New Jersey

Dr. Blanche N. Hardy, Consultant, Pupil Personnel, State Department of Education, Tallahassee, Florida

Mr. John G. Losak, Chairman, Counseling and Testing Department, Miami-Dade Junior College, Miami, Florida

Dr. S. V. Martorana, Vice Chancellor for Two-Year Colleges, State University of New York, Albany, New York

Mr. Philip Morse, Director, Student Personnel, College of San Mateo, San Mateo, California

Dr. James H. Nelson, President, Waubonsee Community College, Aurora, Illinois

Dr. Dallis K. Perry, Assistant Director, Student Counseling Bureau, University of Minnesota, Minneapolis, Minnesota

Dr. Alfred M. Philips, Vice-Chancellor, Dallas County Junior College District, Dallas, Texas

Dr. Leonard F. Sain, Principal, School Center Building, Detroit Public Schools, Detroit, Michigan

Mr. Oliver W. Wagner, Director of Admissions, Washington University, St. Louis, Missouri

Dr. Fred L. Wellman, Deputy Director, Virginia Department of Community Colleges, Richmond, Virginia

APPENDIX D

Participating Colleges
Phase I and Phase II

PARTICIPATING COLLEGES

(Phase I)

Academy of Aeronautics
Flushing, New York

Bakersfield College
Bakersfield, California

Community College of Baltimore
Baltimore, Maryland

Catonsville Community College
Catonsville, Maryland

College of the Mainland
Texas City, Texas

College of San Mateo
San Mateo, California

Community College of Allegheny County
Pittsburgh, Pennsylvania

Corning Community College
Corning, New York

Daytona Beach Junior College
Daytona Beach, Florida

Dean Junior College
Franklin, Massachusetts

Dutchess Community College
Poughkeepsie, New York

El Centro College
Dallas, Texas

Ferrum Junior College
Ferrum, Virginia

Florissant Valley Community College
Ferguson, Missouri

Forest Park Community College
St. Louis, Missouri

Galveston Community College
Galveston, Texas

Grand Rapids Junior College
Grand Rapids, Michigan

Louisburg College
Louisburg, North Carolina

Maui Community College
Kahului, Maui, Hawaii

Meramec Community College
Kirkwood, Missouri

Mercer County Junior College
Trenton, New Jersey

Miami-Dade Junior College
Miami, Florida

North Georgia Vocational-Technical School
Clarkesville, Georgia

North Iowa Area Community College
Mason City, Iowa

Northern Oklahoma Junior College
Tonkawa, Oklahoma

Penta Technical College
Perrysburg, Ohio

Richland Technical-Educational Center
Columbia, South Carolina

Robert Morris College
Carthage, Illinois

Rochester State Junior College
Rochester, Minnesota

Rock Valley College
Rockford, Illinois

St. Petersburg Junior College
St. Petersburg, Florida

Santa Fe Junior College
Gainesville, Florida

Staten Island Community College
Staten Island, New York

Virginia Western Community College
Roanoke, Virginia

Participating Colleges (Phase I), continued

Waubonsee Junior College
Aurora, Illinois

Wesley Junior College
Dover, Delaware

Western Piedmont Community College
Morganton, North Carolina

West Valley Junior College
Campbell, California

William Lowndes Yancey State Junior College
Bay Minette, Alabama

PARTICIPATING COLLEGES

(Phase II)

Academy of Aeronautics
Flushing

Amarillo College
Amarillo, Texas

Arapahoe Junior College
Littleton, Colorado

Arizona Western College
Yuma, Arizona

Baltimore Junior College
Baltimore, Maryland

Beckley Junior College
Beckley, West Virginia

Canada College
San Mateo, California

Centralia College
Centralia, Washington

Central YMCA Community College
Chicago, Illinois

Chicago City College
  Bogan Campus
  Crane Campus
  Loop Campus
  Mayfair-Admundsen Campus
  Southeast Campus
  Wilson Campus
  Wright Campus
Chicago, Illinois

College of DuPage
Naperville, Illinois

College of the Mainland
Texas City, Texas

College of San Mateo
San Mateo, California

Community College of Allegheny County
  Boyce Campus - Monroeville, Pennsylvania
  South Campus - Pittsburgh, Pennsylvania

Daytona Beach Junior College
Daytona Beach, Florida

Dutchess Community College
Poughkeepsie, New York

Elizabethtown Community College
Elizabethtown, Kentucky

Ferrum Junior College
Ferrum, Virginia

Florissant Valley Community College
Ferguson, Missouri

Foothill College
Los Altos Hills, California

Forest Park Community College
St. Louis, Missouri

Glendale College
Glendale, California

Participating Colleges (Phase II), continued

Grand Rapids Junior College
Grand Rapids, Michigan

Greater Hartford Community College
Hartford, Connecticut

Gulf Coast Junior College
Panama City, Florida

Hartford State Technical College
Hartford, Connecticut

Housatonic Community College
Stratford, Connecticut

Honolulu Community College
Honolulu, Hawaii

Indian River Junior College
Fort Pierce, Florida

Jackson County Junior College
Gautier, Mississippi

Jefferson Davis Junior College
Gulfport, Mississippi

Kauai Community College
Lihue, Hawaii

Lake City Junior College &
  Forest Ranger School
Lake City, Florida

Lane Community College
Eugene, Oregon

Leeward Oahu Community College
Pearl City, Hawaii

Louisburg College
Louisburg, North Carolina

Manchester Community College
Manchester, Connecticut

Mattatuck Community College
Waterbury, Connecticut

Maui Community College
Kahului, Maui, Hawaii

Meramec Community College
Kirkwood, Missouri

Mercer County Community College
Trenton, New Jersey

Miami-Dade Junior College
  North Campus
  South Campus
Miami, Florida

Middlesex Community College
Middletown, Connecticut

Mississippi Gulf Coast Junior College
  District
Perkinson, Mississippi

Northern Oklahoma College
Tonkawa, Oklahoma

Northern Virginia Community College
Baileys Crossroads, Virginia

North Georgia Technical and Vocational
  School
Clarkesville, Georgia

Northwestern Community College
Winsted, Connecticut

Norwalk Community College
Norwalk, Connecticut

Norwalk State Technical College
Norwalk, Connecticut

Pensacola Junior College
Pensacola, Florida

Penta Technical College
Perrysburg, Ohio

Portland Community College
Portland, Oregon

Richland Technical Education Center
Columbia, South Carolina

Robert Morris College
Carthage, Illinois

Participating Colleges (Phase II), continued

Rochester State Junior College
Rochester, Minnesota

St. Petersburg Junior College
St. Petersburg, Florida

San Bernardino Valley College
San Bernardino, California

Santa Fe Junior College
Gainesville, Florida

Somerset Community College
Somerset, Kentucky

South Central Connecticut Community College
Hamden, Connecticut

Southeastern Community College
Whiteville, North Carolina

Southwest Vocational-Technical Institute
East Camden, Arkansas

Staten Island Community College
Staten Island, New York

Texarkana College
Texarkana, Texas

Thames Valley State Technical College
Norwich, Connecticut

Virginia Western Community College
Roanoke, Virginia

Waterbury State Technical College
Waterbury, Connecticut

Waubonsee Community College
Aurora, Illinois

Wesley College
Dover, Delaware

Westark Junior College
Fort Smith, Arkansas

Western Piedmont Community College
Morganton, North Carolina

William Lowndes Yancey State Junior College
Bay Minette, Alabama

APPENDIX E

Bibliography

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